The Boston Medical and Surgical Journal

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June 16, 1921

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Original Articles.

THE TREATMENT OF CANCER.*

BY FREDERICK BRYANT, M.D., WORCESTER, MASS.,

Consultant Roentgenologist to the Milford Hospital, Assistant in Radiology in the Tufts Dental School.

IT is a matter of great gratification to me to see so many of you present here tonight. The members of our profession are ever eager to learn, from those who have given special study to this baneful disease, what hope they can offer a cancer-cursed people. It is, and ever has been, the most to be feared of all diseases. Old as the Pyramids, both king and slave have felt its painful, nauseous, and deadly spell. It has been the most relentless foe of mankind. Other serious diseases have been rendered almost preventable and the race fears them no more; yet cancer continues to resist our efforts—increasing rather than decreasing. Its annual ravages in America and her possessions have reached the alarming figure of one hundred thousand, while it is conservatively estimated that fully five hundred thousand are today suffering its fiendish tortures. It is the most hopelessly protracted, bloody, stenchful, nauseous, loathsome, painful, incapacitating and ostracising of all diseases. It is the great impending danger and "the arch enemy of middle life and beyond," a time when the individual is of the greatest value to his community and home. It is the great black cloud which has obscured the light of hope from a countless procession of the untimely dead whose cry of pain and anguish has filled the earth.

Is there any silvery lining to this dark cancer cloud? Has any advance been made in cancer therapy during the past quarter of a century? We believe the anwser is decidedly in the affirmative. The past fifteen years of cancer study and investigation have yielded hopeful results to the end that we can no longer excuse ourselves for our inability to remedy this disease with the statement that no one knows anything about cancer. We do know several facts about cancer, and these facts give us wisdom, which we have never had before, for its prevention, treatment and cure We are now able to consider cancer, by virtue of these facts, as a somewhat preventable and a somewhat curable disease. Cancer is no longer, therefore, an unknowable mystery. The hideous mask has been removed from this frightful phantom. From this accumulation of knowledge we are now able to fight this incarnate devourer of life with vital facts. What are these facts?

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* Read before the Middlesex East District Medical Society, Harvard Club, Boston, Mass., Oct. 20, 1920. This paper was presented as a report on the treatment of cancer at The Mayo Clinic.

We shall briefly tabulate these helpful facts under eight headings. There is a quibble over some of these facts, but the majority of cancer students has so pronounced, and the majority rules.

1. It has been established that cancer is neither hereditary, infectious, contagious or communicable. This has practical significance in life insurance. It directly aids the sufferer, for, no longer an object of danger, he is better cared for and is no longer subjected to leprous isolation and ostracism.

2. It is known that the age of greatest susceptibility or the so-called cancer zone is mid-life and on. This fact teaches us to watch most closely for cancer at this most susceptible age. There used to be an adage, in the medical school—*suspect syphilis.* But syphilis has a definite test and a specific cure, neither of which apply to cancer. Therefore it would seem wiser when the patient is in the cancer zone to suspect malignancy.

3. Cancer students are agreed that the local exciting cause of cancer is some form of chronic stimulative irritation, as, for example, the ragged tooth pricking the tongue. Detect and remove the irritation and the cancer does not appear. This fact teaches us that cancer is a preventable disease in so far as we may be able to learn to detect precancerous symptoms, or to remove precancerous irritations. In mouth cancer, the dentist is the master man, for "Good dentistry has eliminated a percentage of cancers of the jaw due to irritation of defective teeth." "We must spread more widely the knowledge that chronic irritation is the great underlying cause of the disease."

4. The conviction is well established that, at first, cancer is a local, or, at most, a regional disease which, if thoroughly removed while incipient or while local, a full and permanent recovery may be confidently expected. This fact emphasizes the time element; that prompt action may mean life; that delay is pretty sure to result in death; that here procastination is the thief of life; that in cancer it is the early whisperings of disease that are all important; that we should "treat the pathology of the living during the early stage of deviation from the normal physiological state." "Living pathology must hold a greater place in the surgeon's mind than the pathology which has been developed from the mortuary and has dominated medicine for the past generation."

5. Cancer in the different parts of the body has come to be regarded as an almost different disease, requiring different treatment and entailing a different prognosis. This fact indicates the vastness of the subject and the necessity of much study and experience to enable one to cope successfully with malignancy in its varied aspects and localities.

6. There is much evidence that certain constitutional predisposing conditions aid and abet the local exciting cause. Here we must take info responsible consideration, habits of life, modes of living, other diseases, and, in fact, any influence which tends to impair the individual resistance. This fact teaches the value of maintaining the highest degree of vigor during the cancer zone and the same principle applies to those already afflicted. It must also be borne in mind that some are more "resistant to cancer" than others.

7. It is evident that cancer increase keeps pace with modern civilization. There is a subtle combination of influences, in our modern ways of living, which ncrease the sources of chronic irritation. Peoples who live in a more primitive way and who are less exposed to the fads and fancies, dissipations, luxurious habits, strenuosities of thickly populated industrial city life are less afflicted. This fact teaches that the universal trend of modern civilization to city life is not unattended with cancer danger. "Whenever a certain type of cancer exists in a race of men or in a country with great frequency as compared with other races or countries, it is due to a single cause, usually a social custom." "It seems to be a well established fact that in the countries in which the breasts are allowed to remain exposed to the air without covering, cancer of the breast is extremely rare, and the incidence is in direct ratio to the amount of covering of the breast and the pressure exerted upon it." "The influence of drinks too hot to be held comfortably in the mouth in the production of chronic irritation which precedes the development of gastric cancer seems probable." We must place a suspicious attachment upon all forms of the use of tobacco. "Cancer of the lip and tongue is on the increase as the habit of smoking is on the increase in both sexes."

8. The eighth and last fact is given this position of importance because it carries great

possibilities in a curative way. The fact has been discovered, and well worked out, that the radiant energy of heat, the roentgen ray, and radium have a destructive and a selectively destructive action upon the cancer cell. This is no longer a theory. This is the fact upon which the cancer therapy at the Mayo Clinic is based, and becomes, therefore, the burden of this report.

It seems most befitting to style this method of treatment as radio-surgical, as it is a combination of surgery and the various forms of radiation. This fact has been established in several medical centres of the world. It has been employed to some extent in many widely scattered clinics. American doctors have made successful use of it in private practice. The fact remains, however, that The Mayo Clinic has made the most complete, extensive and routine application of it. (Lantern slides of the Mayo Clinic.)

The employment of this radio-surgical method of cancer therapy must not be looked upon as a passing fancy. It was only adopted, as all the methods of this world-renowned clinic have been adopted, after due original research, careful investigation and painstaking consideration. When they had demonstrated to their own satisfaction that radiations did actually destroy malignant tissue, they accepted it with open minds and gave it practical employment.

This progressive spirit deeply impresses the visitor when, for the first time, he makes a pilgrimage to this surgical shrine. Here, men are studying to improve upon all that is already known, keen as detectives to note an error, unbiased as judges and, what we believe is a greater virtue, prompt and fearless as generals to act and put into actual practice the results of their discoveries. They are unhampered by conservative and restraining traditions. They have no traditions, for they are building up a unique medical unit on their own foundations. "The interpretation of facts constantly changes, the new interpretation of old and new facts are the sources of progress. Only as we are doubtful of our interpretation, can we hope to advance scientifically."

Is it not possible that this great clinic, which has no parallel in the world, is destined to still greater things? "We are lost in an endless vale of technic. Much valuable data has and is being accumulated, but it is confused, it lacks order and unification. There is a man coming presently who will lead us out into the light. He will give order, simplicity and uniformity to these many bewildering facts and complications. He will build his basis firmly on embryology, anatomy and physiology." May not these words spoken at the Mayo Clinic be prophetic of its great future in medicine? (Lantern slides illustrating the discovery and the biological action of radium.)

Radium has ever suffered from over-enthusiastic claims. It ran the gauntlet of a blundering stage of unscientific experimentation, relegated entirely to hopeless moribund cases, relegated to the extreme rear and only called upon in time of disastrous rout, and yet, in spite of these humiliating disqualifications, it gradually came back. Slowly but surely it began to prove its real worth. Today, as a result of three years of scientific application, in a variety of human ills in a narrow group of well-selected cases, where hardly any other remedy avails, it has taken the proud place in medicine is our greatest specific.

This discovery not only gave us a new therapeutic agency of a unique and peculiar value, but it gave scientists an entirely new conception of the composition of matter. It demonstrated a power of the atom undreamed of and almost beyond comprehension and belief. Here was an element practically indestructible yet possessed of almost unlimited energy, capable of firing out, as 1% of its output, thirty million projectiles per second with a velocity greater than that of light, each of which was found to pierce perceptibly a solid foot of iron. This introduced a new and unknown form of energy, namely, the energy of the atom or atomic energy. Heretofore all energy was supposed to reside in the molecule and molecular energy had been studied and was fairly well understood. The Mayo Clinic is already well under way in the study of atomic energy as a factor in cancer destruction. "Abstract sciences are being called to our aid, and scientific facts, apparently unrelated, are beginning to be understood in their relation to medicine. Much may be expected from bringing certain of the abstract sciences, especially physics, to the aid of biochemistry in giving us a better understanding of physiology and pathology."

We have three forms of radiant energy, all of which are made use of in the radio-surgical method, namely, heat, massive roentgen rays and radium. A comparison of these forms of energy is very necessary in attempting their application.

The radiant energy of heat is much the best known, due to the fact of its long study dating back to the beginning of physical and chemical science. It belongs to the forces of molecular energy, and as such, it has been pretty well understood. Its advent in medicine is not new. Since the discovery of germ life, it has played the leading rôle in disinfection. By its energy all dressings are prepared for operation and it has long been accepted as the best disposer of any contagious material. It has also been used in the actual destruction of malignant tissue for several years. Various cauteries and forms of heat have been devised, with water-cooled accessories, from time to time. It has been found that heat, in these forms of application, possessed some virtue in stopping much of the hemorrhage and malodor and seemed, for a time, to retard the malignant process, but on the whole it has not proved curative, and has never become a routine measure.

It is now beyond possible question that the cancer cell cannot endure or survive a degree of heat or radiation which has no ill effect upon the normal cell. The evil cell is a weakling from its embryonic nature. "We know of and have seen cases of well-marked malignant disease which have all at once disappeared without any apparent treatment whatsoever. In all these cases it is reasonable to suppose that the curative agency is heat. An inter-current disease, such as malaria or erysipelas, in which the fever reaches a high mark for a time, may have destroyed the malignant process."

Heat energy in its destruction possesses no selective ability. It destroys everything in its path, up to a certain line, and here it stops. It has little or no penetrative power. In the radio-surgical treatment the cautery is used to destroy the gross mass of cancerous tissue down to its limits, if possible, for the reason that it gives less hemorrhage, less shock, and by its sealing action it is less liable to engraft or open up the lymphatics and blood vessels to cancer cell transplantation.

The radiant energies of the roentgen ray and radium are very similar, but they differ very widely from the radiant energy of heat, in that they have no germicidal action. The former can be made to burn the tissues somewhat like the cautery, but they possess this striking and all important difference in that while they do possess a destructive ability they can be so applied by a system of filtration that they also possess a selectively destructive ability. This fact enables the operator to save the skin and yet dip down beneath the skin and pick out the malignant cells from among the normal tissues. Beyond a self-limiting line of coagulation necrosis the radiations of heat do not penetrate and here its usefulness ends. Where the energy of heat ends, the energy of the roentgen ray and radium begins. The latter by virtue of their atomic explosive energy send cancer destructive bombardments deep into the tissues.

Much investigation and argumentation have taken place regarding the similarity of these two radiations. While much alike, it has been noted that radium is the more penetrating and more intense but less extensive. The roentgen ray covers large surfaces, while radium is limited to point contact and is best suited to work inside rather than upon the tissues. It has been noted by those who have used both agencies that the burns produced by each differ. The radium burn heals slowly, but without pain, and is in no way considered a matter of great moment, while the burn from the roentgen ray almost never heals, is exquisitely painful, and is an accident to be dreaded.

"It has been found that these two radiative energies act upon the malignant cell. Radium attacks the nucleus of the cell, while the roentgen ray acts upon the various cell structures pretty much alike. Now it has been established that the nucleus of the cancer cell is the heart of the cell life. Destroy this and the cell dies. But what is equally important, the nucleus, with its accompanying centrosomes, regulates and initiates the reproduction function of the cell. Here procreation takes place through a complicated biological mechanism. To destroy the cell by radiation, you must destroy the nucleus. To inhibit or temporarily prevent reproduction, you must reach the nucleus with an inhibitive dose of radiative energy. Radium either destroys the cell or inhibits its reproduction by its selective specific action upon the nucleus and its satellite centrosomes. The roentgen ray, on the other hand, acts equally upon the nucleus, the protoplasm, the cystoplasm and the centrosomes. If it is applied in light stimulating or irritating doses covering a long time and it is not powerful or massive enough to accomplish the actual destruction of the cell nucleus, it may act as a chronic stimulative irritation and serve to derange or upset the community life of the cell and cause the centrosomes to start on a mad career of procreative activity and cancerous tissue production. This fact has been demonstrated over and over again, on the hands of roentgen ray operators who worked without protection. This fact has become a sound argument for the irritation theory as the local exciting cause of cancer. So far as is known, radium, unlike the x-ray, has never caused cancer because of its specific nuclear action."

Let us now note the practical application of this radiative knowledge to the treatment of cancer. Three claims are made for its use by those who have had experience with it. "By properly combining radiotherapy with surgery, *we can increase operability, lower mortality,* and *increase percentage of cures.*" "Radiotherapy destroys cells for a certain distance, but cells are sterilized at a greater distance so that their reproduction is checked, and connective tissue is caused to develop, which acts as a barrier to the further extension of the malignant process." Radiotherapy, whether applied as radium, x-ray, or heat, sickens malignant cells beyond the area of destruction. During this period of cell sickness their resistance is reduced and procreation is less efficient, but operation should not be delayed after radiotherapy, since the period of increased cell vulnerability is short and the connective-tissue development which interferes with subsequent operation is rapid. This indicates the desirability of anti-operative radiation to "prepare the cancer field for operation, and as after treatment to reduce the percentage of recurrences."

The application of radiations should be thorough and extensive, going out far afield of the growth along the line of the lymphatic drainage or paths of metastasis. The innocent lymphatics should be sclerosed and fibrosis promoted as a wall of protection to the subsequent attempt of malignant invasion during or following operation. "Malignancy is the property of the cell; the stroma is not a part of the neoplasm, but is a measure of nature's defense." "Undoubtedly a large proportion of cancer cells are destroyed by the defense cells of the body; of these the fibrous connective tissue cell is the most important, since it cuts off nourishment from the cancer cell." "Malignant cells will sometimes be found capsulated in the tissues of an operative field from which a malignant neoplasm has been removed. Occasionally through some agency, such as traumatism or general disease, the retaining wall breaks down, and metastasis occurs after many years of apparent operative cure." There is, therefore, every argument to create as much fibrous connective tissue as possible, in and about the operative field.

Radiations preceding the operation serve to extend operability by assisting the surgeon to remove all the malignant cells in doubtful or border-line cases. It is these border-line cases of malignancy which have yielded exceedingly poor operative results. Surgeons are more and more reluctant to incise a malignant growth where it is a question whether it can be completely removed or not, for fear of converting a local into a general disaster. Radiation assists the surgeon in two ways in this otherwise hopeless field; by temporarily rendering the tumor mass inert so that the transplantation of any cancer cells will not be attended with grafting in other localities; and by reaching with destructive rays or capsulating in fibrous tissue any cells left behind. "I have been impressed with the fact that too little attention has been paid to traumatic transplantation of malignant cells during operation. Rough handling of the growth loosens cells which may become grafted on any surface denuded of its normal covering."

"In our early cases of vaginal hysterectomy for cancer of the cervix we rarely had a cure. The carcinomatous cervix was grasped with vulsellum forceps, traumatizing the tissues during the removal of the growth, and local recurrence resulted. We then began doing all vaginal hysterectomies with the cautery knife and many five-year cures were obtained. The cautery method has a field of usefulness in selected cases. We found that the excessive dilatation of the vagina, preliminary to the use of the cautery, made many fissures in the vaginal mucosa. In two of our cases carcinoma developed in these vaginal fissures from cells deposited there, although there was no recurrence at the site of the original neoplasm."

For one year past, the radio-surgical method has been employed in these cases. Radium has been applied to the cervix for full dosage. An hysterectomy follows within a week of the last treatment. This gives the radiations sufficient time to sicken the evil cells without incurring the formation of fibrous tissue which would in any way interfere with the operation. The operation is followed by another full radium dosage to the vaginal vault either to the cervical stump or to the sutured area.

The claims for this method of treatment are: that in ninety-six consecutive cases dating back one year, there has been no mortality, while the year before, for the same cases, the mortality was twenty per cent.; that radium, at the cervix, penetrates further than the knife can go; that this amount of radium in the pelvis not only sickens the malignant cells and prevents traumatic transplantation during the operation, but that after operation it destroys any cells left behind, either directly or by the creation of a large amount of the hardest kind of fibrous tissue accomplish their permanent capsulation; that by the use of radium the most extensive operation is done without shock, for radium does the deep dissections; that no operative mortality attends this method.

While no authoritative statement can be made at this time, yet there are many rumors that radium, before many years, will displace operative procedures in cancer of the cervix in all stages of the disease. Some leading gynecologists are pretty well convinced that when you consider the results obtained by radium and surgery, the small disturbance of one and the shock and danger of immediate mortality of the other, the one requiring a protracted absence from home and an operative skill far in excess of the other, the one almost never contra-indicated, the one frequently administered without an anesthetic, that the simpler remedy is, in time, destined to become the one of choice.

The same general method obtains in the radio-surgical treatment of cancer of the rectum. As far as time permits a judgment less recurrences are in evidence. In all these situations while radium is being used, internally both before and following the operation, the roentgen ray is applied externally in massive doses.

Where any severing of the tissues, in and about the cancerous area is necessary the cautery is used rather than the knife to avoid transplantation of the cancerous cells. The cautery finds large employment in the cancer of the antrum of Highmore. The cheek and tongue being retracted, the cautery, in the form of a small soldering iron, enters the antrum at the place where the cancer points. All the carcinomatous tissue is cooked away with a dull prolonged heat. Radium is placed on the base of the cavity thus established. This method of treatment is preferred to a resection of the superior maxilla because there is less hemorrhage, less shock, and less recurrence. (Lantern slides illustrating the use of the cautery.)

Radium is the agency of choice in cancers of the face which are not too large, old, nor extensive. The cosmetic results are delightful, while a disfiguring operation, in this region, offers no advantage in being able to prevent recurrences.

The employment of radiation is amply justified by its palliative possibilities, if for no other. It was in this hopeless field that radium won its way back to favor. We cannot neglect or refuse to treat hopeless incurable sufferers. We cannot expose them to die on the hillside, as in olden days. In some cases of cancer of the breast and uterus palliative radiation accomplishes excellent results in not only checking hemorrhage, discharge and pain with the prolongation of life, but also rescuing a small percentage to recovery.

In conclusion, we believe that the treatment of malignancy deserves to be classed as one of our modern specialties. Its duty is not only to urge the profession to act promptly, but to make the lay man intelligent to pre- and early cancer symptoms. He who would succeed best must wisely combine all the agencies which have proved therapeutically effectual. Each method by itself alone has failed. The coöperative combination of the radiologist and the surgeon is our greatest hope for the present and the future. He who adheres tenaciously to any one remedy and loses sight of the others will fall short of the best possibilities. The surgeon who does not see his radiative possibilities and the radio-therapist who does not realize his surgical opportunity will equally fail. To this end the radio-therapist seeks the good-will and confidence of the surgeon, disclaiming any attempt or desire to usurp any of his well-earned prerogatives but rather offering radiation as his handmaid to render the work of his hand more permanent and curative. The radio-therapist does not seek to lessen the number of surgical operations, but rather to increase them by extending operability. The open-minded surgeon welcomes this reinforcement, for there is proof enough already that it decreases mortality and recurrences, and relieves him partially or completely of the responsibility in a most trying and unsatisfactory line of cases.

The radio-therapist stands ready to aid the surgeon in radio-surgical method, as outlined above, in operable cases. He also stands ready to administer radiations, in a palliative way, in hopeless inoperable cases or in recurrences where the knife has failed and can do no more. This latter class will yield a frightful mortality if he heeds the cry of a suffering humanity rather than his own personal ambitions in tabulated recoveries.

Radium heresy from professional sources is not uncommonly heard: that it has no therapeutic value; that cases have been made worse by its use; that it is only another of the many “cancer cures” which have flooded the earth; and that it will, like similar ventures, have its little day and cease to be. These unjust and unwarranted conclusions are based on three facts: radium gossip, a case where radium has failed, and no knowledge of radium. Radium gossip, like street gossip, does not stand in a court of justice. In the prejudiced mind the unfortunate case seems never to be forgotten, while brilliant results pass unnoticed. If an appendectomy fails, do we condemn the operation? It is a discouraging fact and one to be deprecated that those who have gained merited distinction in other fields of medical endeavor, whose opinions, therefore, carry great weight, often express themselves freely on another departure with which they have had no practical experience. Not one radium investigator, the world over, can be found who will substantiate in the slightest degree these meritless conclusions.

If radium possesses no therapeutic value, why is it that a large number of medical men, including not a few who have attained eminence in surgery, medicine, pathology and gynecology, are devoting themselves to its use? The Radium Society of America is six years old. It is officered by leading medical men. Has any “cancer cure” before ever gained such a permanently organized following? If radium is a fleeting “cancer cure,” here today and gone tomorrow, how is it that at the end of half a score of years of use we find it winning better and better reports throughout the world? Was there ever a “cancer cure” before, that held its place thus long, with ever-increasing value? Was there ever a “cancer cure” before, based on the greatest physical discovery of the ages? If there is any uncertainty as to the therapeutic value of radium, why do we find our large American clinics expending millions to possess it? One of our state legislatures has, within the year, passed a bill appropriating two hundred thousand dollars for the purchase of radium. This indicates that sufficient scientific and medical evidence of its worth was brought to bear upon that body of laymen till they were convinced that a suffering humanity would be served by their act. Was there ever a time when a “cancer cure” was purchased by a state or at such a price?

If this defensive argument is unsound, why is it that the clinic under discussion, an institution which is leading surgical thought throughout the world, an institution whose deductions and teachings have been followed by our American surgeons, an institution to which many of our profession have gone for treatment themselves, has purchased vast holdings of radium and prescribe its use as the handmaid of surgery in all forms of malignancy? Sufficient evidence, therefore, is at hand to abundantly substantiate the fact that radiative therapy is here to stay in combination with surgery. “Radio-active substances give great promise for the future.” He who resists it resists progress, and he who resists progress handicaps his ability to do for those who look to him for help.

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Notes taken at The Mayo Clinic, September 6 to 15, 1920, by the writer, on unpublished discussions.

Under the Program of Clinics, published June 2, under the subdivision, Massachusetts General Hospital, the date, October 16, 1848, should have read October 16, 1846.

THE TREATMENT OF TUMORS BY X-RAYS AND RADIUM.*

By Robert B. Greenough, M.D., Boston.

In making this brief communication upon the treatment of tumors with x-rays and radium, I would first express to you my thanks for the privilege accorded me of presenting a report before this eminent society of surgeons.

While the subject is one of the greatest intrest to the surgical world, it is one to which few surgeons of wide operative experience have given much of their personal attention, and the therapeutic use of radium and x-rays has been carried out chiefly by physicians and institutions devoted primarily to radio-therapy. My own experience has had to do more particularly with radium than with x-rays, and dates only from 1912, when we first obtained radium in Boston in quantity sufficient to engage in a serious investigation of its effects upon tumor growth.

The institution which I represent—the Cancer Commission of Harvard University—was so fortunate as to secure at that time the services of Professor William Duane, a physicist who had worked for some years under M. and Mme. Curie in Paris, where he had made himself familiar with the subject of radio-activity and had contributed by his investigations to the knowledge of that subject. Under Professor Duane's guidance, and with the coöperation of Dr. W. T. Bovie, who has been working for our Commission in the field of research between Biology and Physics, the attempt was made to apply to the actual treatment of patients the physical principles of radio-activity, which had been established, and to carry on further investigations both in the laboratory and in the clinic, with a view to determining the most effective methods of employment of these powerful and beneficent agents.

Our knowledge of the physics and chemistry of radium far exceeds in accuracy our knowledge of its biological effects, for the reason that our knowledge of biology, so far as the ultimate composition and physiology of cell protoplasm is concerned, is chiefly theoretical. Whatever theory of protoplasmic structure we accept, however, it can be said that as a result of the exposure to radiations of x-rays, or radium, changes occur in living tissues which are at first invisible and unappreciated by our coarse methods of observation, but which later manifest themselves by certain phenomena varying from a modification of growth, either in rapidity or form, to the death and destruction of the cells or tissues involved.

The term *reaction*, or *radium reaction*, has been widely used to express the phenomena following radiation. The comparison is aptly made to the exposure of the sensitive photographic plate, whereby changes occur in the silver salts as a result of radiation. These changes in the silver emulsion, however, are not to be detected by our ordinary methods of observation, until a further chemical reaction, the process of development, brings the latent image into view. Whether the changes occuring in the photographic plate and those occurring in living cells by exposure to radiation are of one and the same nature is a matter of further investigation. It has been held that a process similar to, if not identical with, the ionization of gases may be the means by which these changes in the finer physico-chemical composition of the sensitive film or of the tissue cells are brought about, but much further investigation is needed upon this subject.

Again, the conditions controlling the process of development of the latent effects of radiation on the living cell are quite unknown. Some experiments of Dr. Bovie[1] would indicate that slight variations of temperature suffice to make these changes manifest, and doubtless other agents, such as the chemical changes of anabolism and katobolism perhaps might serve as accelerators or retarders of development in the living tissue. The subject is one of great complexity, because we realize that we are forced to use rays of several different characters when dealing with x-rays and radium. The alpha, beta and gamma rays of radium, the hard and soft x-rays, and the secondary radiations produced by the absorption of x-rays and gamma rays in objects of different composition in their path differ in their powers of penetration, and also in their quantity and in their physical qualities as well. The effects upon living tissues of the different types of rays have been the subject of much investigation, but, as yet, we are only upon the threshold of our knowledge of this subject. It may, however, be accepted as a fact that rays which are not absorbed produce little if any effect upon the tissues through which they pass, and that the penetration of the different rays through tissues of uniform density follows a definite physical law.

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* Read by title at the Fifth Congress of the International Surgical Society, Paris, July, 1920.

As regards the tissues themselves we recognize that differences in susceptibility to radiation exist, such that cells of one kind, as the germ cells of the testicle, are apparently affected far more seriously by a given length and quality of exposure than are the cells of another character, such as those of the external skin. In fact, it is not unreasonable to suppose that the external skin, by adaptation, has acquired or developed a degree of susceptibility to the effects of radiation in the long process of adaptation of men and animals to their environment.

There is good reason to believe, also, that there are certain periods in the life cycle of a single cell when it is more susceptible than at other periods, and it is held that cells undergoing nuclear division are especially vulnerable to the effects of radiation.[2] The law of Bergonié and Tribondeau[3] states that immature cells and cells in an active state of division are more sensitive to radiation (x-rays) than are cells which have already acquired their fixed adult morphological or physiological characters. This law is based upon studies made with x-rays upon the testicle of the rat. It must be remembered, however, that our methods of investigation enable us to detect alterations in cells which are in an active state of division more readily than in cells which have acquired their fixed adult morphological and physiological characters. Redfield,[4] however, obtained very pronounced changes in the fertilization membrane of the Nereis egg by exposures far below that required to produce changes in subsequent processes of mitosis.

In the treatment of tumors by radiation the specific sensitiveness of certain tissues has assumed a very important place. It has been stated, for instance,[5] that "certain types of cancer-cell will be affected four to seven times more readily than healthy cells." An accurate comparison of this sort is extremely difficult to make, as we have no satisfactory standards for measurement, and it would seem to be safer, in our present state of knowledge, to confine our estimates of the comparative degrees of sensitiveness of cells to phenomena which can be measured in the laboratory.

By many experiments it has been established that exposure to radiation is capable of causing the death *en masse* of tissues of varying cellular composition. This may be called the "massive destructive" effect of radium, and it can be demonstrated on plants or animals. Animal tissues are composed of cells of many different varieties, and when a *mass* of tissue is destroyed the cells of all of those varieties die; the dead tissue is separated from the living cells about it (demarcation) and is discharged as a slough or sequestrum. Thus in a severe radium or x-ray burn of the skin the epithelial cells of the epidermis and of the hair follicles and sweat glands, the cells of the corium, the blood vessels, nerves and lymphatics, and those of the subcutaneous fat and fibrous tissue all die, and are cast off, leaving an ulcer lined with granulation tissue, and notoriously slow to heal.

It is well within the bounds of possibility that certain more sensitive types of cells may be destroyed by direct radiation over an area wider than that in which massive destruction occurs of all of the affected cells which compose the tissue radiated. In this wider area, the more resistant cells, such as those of the connective tissues, are not destroyed but are excited to a more vigorous growth. This possibility is borne out by clinical observation for it is well recognized that a radium, or x-ray burn is slower to heal than a burn produced by an ordinary cautery, and the pronounced scar tissue growth surrounding the area of massive destruction and slough is the most pronounced characteristic of the radium or x-ray burn.

There is usually a "latent" period of longer or shorter duration before the results of radiation are manifest. Changes in the electrical conductivity of tissues occur more promptly than do the gross changes of cytolysis or degeneration, but in any case the tissues exposed die, and according to the importance of those tissues to the individual, the individual dies, or sets about the normal processes for the demarcation and extrusion of the damaged tissue and the repair of the defect.

When the exposure to radiation is insufficient to cause the massive destruction of tissues other effects are observed. Protozoa exposed to mild doses of radiation display an inhibition of the phenomenon of cell division lasting for variable periods of time.[6] After this period of inhibition has elapsed, recovery may take place and the cells begin to divide again, and in some cases at a more rapid rate than before radiation, so that ultimately the total growth from the radiated cells may exceed in number the growth derived from the unradiated controls. Here we see what can be described only as phenomena of inhibition and of stimulation.

In other experiments, cells of embryonic character (tadpoles)[7] exposed to radiation showed temporary arrest of growth with subsequent development into abnormal forms (monsters). This is an example of a modification of growth differing somewhat from either of the first two described effects, though possibly dependent on a combination of inhibition and stimulation.

While admitting that our methods of observation are far too crude to permit any but the broadest generalization, we may say that, as a result of radiation (1) living tissue may be destroyed *en masse;* (2) growth may be temporarily inhibited; (3) rapidity of growth may be stimulated, and (4) the manner of growth may be modified. In the terms of these four phenomena we must consider the action of radiation in the treatment of disease.

While the massive destruction of a complex tissue demands a dose of radiation sufficient to kill the cells of all of the different types of the area involved, it must be borne in mind that the effects of stimulation, inhibition and modification of growth may be exerted upon individual types of cells in the tissue area exposed to radiation, depending upon the dosage, the susceptibility of the cells to radiation, and doubtless upon many other factors of which we have at present insufficient knowledge. We must remember, too, that for the treatment of non-malignant diseases, and for the palliative (non-curative) treatment of cancer, all of the cells exposed to radiation need not be destroyed. Satisfactory results may well be produced if only fifty or seventy-five per cent. of the growing cells are affected by the exposure. If we are to cure cancer, however, by radiation, the exposure must be shown to be one hundred per cent. efficient in destroying the disease, or recurrence is to be expected.

In the practical application of radiotherapy to the treatment of tumors, the mass destructive effect of a lethal dose of radiation is frequently employed. Superficial non-metastasizing carcinomata of the skin of both the squamous and the basal-cell variety are often completely destroyed by this use of radium. The destructive effects of radium are employed also in the treatment of some of the metastasizing forms of cancer, in situations where the operative removal of the tumor is for one or another reason impracticable or impossible. Here the insertion method by the use of bare tubes of emanation, or the needles holding radium salts or emanation at their tips, has proved effective in producing the death *en masse* of the tumor tissue. These measures can be employed with safety, however, only in situations where the location of the tumor tissue on the surface of the body permits the normal suppurative processes for the separation of the necrotic tissues and their discharge to take place without the risk of deep and dangerous infection. While many attempts have been made to bury tubes of emanation in the substance of deeply situated tumors, such as brain tumors or sarcomata of different varieties, in our experience either the dosage has been so small as to be ineffective, or a degenerative process has resulted with secondary infection such that an opening to the surface for drainage was made necessary. For the treatment of certain malignant tumors on the surface of the body when operative removal of the tumor is impossible, or in combination with operation when operative removal alone is insufficient, the use of the massive destructive action of radium, by the method of the insertion of tubes of emanation, finds a field of the greatest usefulness.

Since it is the absorbed rays rather than the penetrating rays which produce the greatest effects on living tissues, it is probable that the beta rays are the ones which are most concerned in producing massive destruction by the use of radium. For this same reason massive destruction is produced only in close proximity to the source of radiation, and the filtration of the tumor tissue itself protects the more distant portions of the growth from deleterious effects. In our own experience with a dosage of fifteen millicuries of radium emanation inserted in a tumor mass in a bare glass tube, and allowed to remain in place for an indefinite period of time until the emanation has decayed, a massive destructive effect has rarely been obtained at a distance of more than one centimeter from the source of radiation.

Inhibition of growth: The phenomenon of temporary inhibition of growth is observed alike in the laboratory and in the clinic. Without gross changes in the appearance of the tissue, cells exposed to radiation may remain quiescent for a considerable period of time, only to wake to active and continued growth after the radium effects have passed away. In the clinic this phenomenon appears as the recurrence of a tumor apparently destroyed by radium treatment.

While we cannot establish any definite limit to the duration of this phenomenon of inhibition of growth we must believe, from our observations of recurrence of cancer after radium treatment and after operation, that a very long time may elapse—in some cases several years—before cancer cells of certain types resume their activity and attain a sufficient growth to permit clinical recognition as a recurrence of the disease. It must be accepted as a positive fact, however, that radiation can retard or inhibit growth for a considerable period of time.

It is now generally conceded that small doses of radiation produce a stimulant effect on growth. This is in accord with the general physiological principle that a small dose of a destructive or paralyzing drug or agent has a stimulating effect, and it has been demonstrated in the laboratories both in relation to plants and to animal tissues.

The exact nature of the change which takes place in the tissue cell as a result of radiation and which results in a subsequently increased rapidity of growth, is quite unknown to us. We must admit, however, that it is most improbable that one dose of radiation should contribute a constituent of growth which was previously lacking, as would be the case if a plant or animal were supplied with a greater quantity of light, heat or moisture. On the contrary, the primary inhibition of growth followed by the later increased rapidity of cell division would appear to justify the assumption that damage was done to some part of the cell mechanism by the radiation, and that as a result of this damage the normal (protective) processes in response to injury were excited and repair begun. It is well known that nature's efforts at repair often exceed in their amount the actual defect.

Certain observers[8] go so far as to maintain that the effect of stimulation by radiation is sufficient in actual experiment to lead to the production of cancer, and cite the development of cancer in x-ray lesions in support of this assertion. While we have not a sufficient knowledge as yet of the reasons for, and of the stages of the development of x-ray cancer, many observers believe that x-ray cancer is a result of the long-continued and slowly healing x-ray burn, and of nature's efforts to repair this defect, rather than a specific late effect of the radiation of the epithelial cells themselves.

There is another aspect of the effects of radium when used in the treatment of tumors which is of some importance, and that is the effect exerted on the normal tissues surrounding the area of disease. A sufficient number of observations have been recorded to make it certain that changes in the blood vessels and in the connective tissues in the way of a new growth of cell elements are the earliest observable histological changes after radiation. How much of this change is primarily the result of the radiation of the connective tissue cells themselves, and how much due to the natural process of inflammation and repair excited by the presence of the damaged tumor tissue, it is impossible to state. It is of note, however, that a marked new growth of connective tissue elements occurs before any recognizable change in the epithelial cells makes its appearance. In the clinic we have an example of this effect upon connective tissue growth, in the diffuse fibrous tissue formation found at operation in the exposed area after prolonged x-ray or radium treatment. It is to this cause that surgeons attribute the well-known tendency to diffuse capillary hemorrhage and the lowered resistance against infection which is shown in cases of this character when subjected to secondary operation.

It has been well said that the ideal use of radium for the treatment of a tumor would be obtained if we could thrust into the middle of the tumor an amount of radium sufficient to destroy the tumor tissue completely, and at the same time to stimulate the surrounding connective tissues of the host to active proliferation such that the area became walled off by a dense fibrous tissue barrier. While admittedly a matter largely of theory, there are competent observers who attribute much of the so-called retarding effect of radiation upon deep tumors to the stimulating effects upon the surrounding connective tissue rather than to the destructive or inhibiting effects of radiation upon the tumor cells themselves.

The modifications of growth which result from the radiation of living cells depend to a great extent upon the nature of the tissue investigated. Thus normal tissues may be made abnormal, and developing embryonic cells may be made to develop in an abnormal way even to the extent of the production of monsters. In the clinic, the ability of radiation to modify the growth of cells is shown in the application of radiotherapy to the relief of benign lesions of the skin, such as papillomas and keratoses. In these cases the destructive effects of radiation are not needed or desired. After a mild reaction the deeper cells of the epidermis which have previously been growing in an abnormal manner, begin to grow in a more normal manner; the abnormal cells are cast off and the lesion is cured without a scar. It is this peculiar and but little understood action of radiation that has led to some of the misunderstanding of the limitations of radiotherapy, for this action, while of the greatest value in the treatment of non-malignant lesions, can be counted upon but little in the attempt to eradicate malignant disease. No modification of growth of cancer cells short of death and destruction of every cell is sufficient to cure the patient of cancer. In cancer we find epithelial cells infiltrating the tissues at a distance from their normal situation. It is by this criterion rather than by the cell morphology that we recognize the disease, and no matter how extensively their growth is modified, so long as cancer cells are living and capable of subsequent further cell-division and growth in their abnormal situation, the patient is not cured of his disease. There is thus a very definite limitation to the possible employment of the modifying or alterative effect of radiation in the cure of cancer, and however valuable the effects of radiation may be in inhibiting or retarding the growth of cancer cells in palliative treatment, it is the destructive effect which must be obtained if we seek to cure the disease.

We must now consider the so-called "selective action" of radium upon tumor tissue. It is true that some of the benign lesions, like papillomas and keratoses, which yield to the "modifying" effect of radium, without a destructive effect, are of the class of so-called precancerous lesions, but this does not give us reason to presuppose a similar reaction when dealing with cancer tissue. It is also true that variation in the sensitiveness of different tissues to radiation is a well-established fact. It is generally recognized that the lymph adenoid tissues and those of the ovary and testicle are especially sensitive to radiation. With these considerations in mind let us judge whether the actual experience in the clinic bears out the supposition that cancer tissue has a specific sensitiveness to radiation.

Certain tumors of lymph-adenoid tissue, such as malignant lymphoma (Hodgkin's disease) and lympho-sarcoma appear to exhibit a definite and positive sensitiveness to radiation in that when they are for the first time subjected to deep radiation profound changes in their structure take place—the tumor masses shrink and occasionally disappear, without undue damage to the normal tissues overlying the disease. In our experiences these changes are temporary rather than permanent, and although a recurrence of the tumor masses in the same or in other lymph-nodes may again react favorably to radiation, sooner or later the sensitiveness is lost, and the patient ultimately succumbs to the disease. In myeloid leukaemia, also, profound changes in the blood picture, in the size of the spleen, and in the patient's comfort result from deep radiation of the spleen; but, again, the improvement is temporary and is followed by recurrence of symptoms and ultimately death. These two diseases, although of a fatal character, are not really comparable to carcinoma but they are often invoked as evidence of a selective action of radium. This action, however, is one of modification of growth or even possibly of stimulation of certain types of tissue, rather than of a destructive effect, and the beneficial effects of treatment in both of these conditions are, as a rule, temporary—the disease is not cured.

The cells of the ovary and of the testicle are, again, notoriously susceptible to radiation. This subject has been studied more in relation to the x-ray than in relation to radium, but it is well known that ovarian function and menstruation can be brought to an end by intrauterine applications of radium, and with all the symptoms of the menopause. The condition of azoöspermia has also frequently been found in male x-ray workers, although there is reason to believe that recovery from this condition may subsequently occur when exposure ceases.

When cancer is superficial and accessible to direct radiation of any desired dosage either by surface applicators or by insertions, it can often be permanently destroyed. In no case of actual cancer, however, have we succeeded in this purpose without the production of a destructive lesion, and in many cases we fail to destroy the disease entirely, and at some subsequent time the disease recurs. In some cases, indeed, as when a basal-cell carcinoma involves the bones of the face, or a carcinoma of the tongue extends into the tissues of the floor of the mouth, the cancer tissue appears to be more resistant to radiation than the normal tissues in its vicinity. In these cases, at least, no specific sensitiveness is manifest.

Advanced cases of cancer of squamous-celled or glandular origin which have extended to the regional lymph-nodes are frequently subjected to treatment with radium. The extension of carcinoma to the regional lymph-nodes is a familiar occurrence, and the enlargement of these nodes is commonly accepted as evidence of this extension having taken place. We must not forget, however, that other causes for enlargement of lymph-nodes exist, and it is not at all uncommon to see an inflammatory process in the regional lymph-nodes due to the ulceration of a primary carcinoma. Even in the presence of a certain amount of infiltration with cancer cells, inflammatory changes may occur and lead to fluctuations in the size of lymph-nodes far too rapid to be interpreted as due to cancer growth alone. In almost every fatal case of carcinoma of squamous-celled or glandular origin, extension of the disease to the regional lymph-nodes ultimately takes place. We have given radium treatment in a very large number of these cases, but in no case have we succeeded in destroying, permanently, the disease. It is true that shrinkage in size of an enlarged node is occasionally observed, but we are inclined to attribute this, when it occurs, to a change in the accompanying inflammatory process rather than to a destruction of cancer tissue. As a result of prolonged radium or x-ray treatment, areas of glandular involvement may further show a diffuse thickening of the surrounding connective tissues, and we have thought that a retardation of the progress of the disease may have occurred, but we have yet to see the permanent cure of any such case, and such improvement as is manifest may well be due in part, at least, to the stimulating effects of radiation on connective tissue growth rather than to any specific destructive effect on cancer tissue.

We have seen that cells engaged in mitotic cell division are generally believed to be more sensitive to radiation than resting cells. One of the characteristics of cancer tissue is the large number of mitotic figures present, as well as the fact that many of these mitoses are of an irregular or atypical character. The number of mitotic figures is indeed accepted as a rough indication of the rapidity of growth of a given tumor, and thus an index of its degree of malignancy. Unfortunately, we have little accurate knowledge of the amount of time consumed in a mitotic cell-division in cancer tissue in the body, but it is not unreasonable to suppose that a part, if not the greatest part, of the supposed sensitiveness of cancer tissue to radiation is dependent upon the number of cells actually undergoing mitosis during the period of exposure. If this is so, a fractional destruction of the tumor only can be expected as a result of repeated deep radiation, for during each exposure only those cells in mitosis would be affected, and a diminishing but constant residue of unaffected cells would always remain to wake into activity and grow at some subsequent time, and produce recurrence. We must also recognize that there is abundant evidence that repeated exposures to radiation produce a gradual loss of sensitiveness on the part of the tissues exposed, so that the attempt to accomplish a fractional destruction of tumor tissue by deep radiation is by this fact, also, made more difficult. The clinical observations of the results of deep radiation on cancer tissue are in accord with this theory, for although inhibition or retardation of growth may be observed, the destruction of the tumor and the cure of the disease are not accomplished.

In general, we may say that experience in the clinic and in the laboratory has shown that the massive destruction effect of radiation (by direct application) is necessary for the cure of malignant disease.

While certain tissues show a sensitiveness to deep radiation, which is of value in the treatment of non-malignant diseases, and in the palliative (non-curative) treatment of malignant disease as well, the cure of cancer (estimated in surgical terms on a three- or five-year basis) is not accomplished without massive and total destruction of the tumor by direct application of the source of radio-activity.

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VISCEROPTOSIS AS A CAUSE OF "STOMACH TROUBLE."

By William D. Reid, M.D., Boston.

Visceroptosis has received a large share of attention from orthopedists and internists during the past two decades, and medical literature is not lacking in excellent articles on the subject. Nevertheless, one continues to see cases not yet diagnosed, though they have passed through the hands of one or more physicians. The type to which the writer refers is that in which the patient comes for relief of "stomach trouble." It is not held that this paper will present new facts, but it is hoped that it may lay further emphasis on an important subject.

The American Illustrated Dictionary defines visceroptosis as "a prolapse, or the falling down, of the viscera." It is sometiues called Glenard's disease, splanchnoptosis, enteroptosis, or gastroptosis, but the term visceroptosis seems preferable, as it is well known that the condition often includes the thoracic organs as well as those of the abdominal cavity; ptosis of the heart or "dropped heart," is recognized by all cardiologists.

A lack of good physical development is typical of the individual with visceroptosis. The appearance of such patient has been aptly described by stating that they carry themselves in the "posture of fatigue." Any medical officers who happened to serve with the Special Training Battalion in France, as did the writer for a short period, saw many examples of undeveloped young men who were physically unfit for military duty.

Malnutrition is also associated with visceroptosis. In 1918, Max Einhorn, in a paper entitled "Enteroptosis and Malnutrition,"[1] again emphasized the dependence of one on the other. One further notes the close relationship between the development and state of nutrition as found in the French children examined by the American Red Cross. The report by Dr. William P. Lucas gives the figures for development as: good, 19.4%; fair, 37.5%; poor, 42.4%; and for nourishment as: good, 19.4%; fair, 44.3%, and poor, 36.3%.

But to proceed to the case as seen by the internist. Commonly one is told that he is to be consulted about a case of "Stomach trouble," gastric ulcer, perhaps, and that the patient has been ailing for some time but has failed to obtain relief in spite of the attention of one or more physicians. In the writer's opinion, the patient, and at times the family, may all be said to be in a state of neurasthenia. And small wonder, as they often have been given as many opinions as they have consulted doctors,—some advising resort to surgery and others against. This variation in the advice received generally has an upsetting effect.

At this point a few case reports will best serve to picture the type of patient to which the writer would draw attention.

Case 1. Single woman. Seen June, 1915. Aged 34 years. Canadian; school teacher. Said to have gastric ulcer, but patient believes cancer to be the correct diagnosis. Family History—Negative. Past History—Chicken-pox, scarlet fever and measles in childhood. "Sort of puny" until 13 years old. Sore throat once a year. "Rheumatics" past four or five years in knees, back, and posterior aspect of left thigh. The backache was bilateral and low down; no story of trauma. Aspirin gr. v. t.i.d. of uncertain value. Repeated colds in winter of 1913-'14.

Catamenia began at 13 years, regular, two days duration, rather painful. Bowels, "bad all my life," sometimes fail to respond to two heaping teaspoonfuls of Epsom salts. Micturition: night once, none in the past three weeks; day, four to six; never painful. Drinks eight glasses of water per day. Weight, 140 pounds at 14 years, 125 to 130 about five years ago, 130 in the fall of 1914; present weight is 102 pounds and has been gaining of late.

Present Illness—Dates illness from fall of 1914. About one week of abnormally great appetite, with burning epigastric pain. (August, 1914, "severe cramps of bowels," but almost nothing passed. Pain was located in the lower abdomen, and patient thinks that it ceased in about two days. About once every summer has had a similar though milder attack. Isn't certain if the attacks have occurred at other times of the year. In 1906, there was a severe attack which confined the patient to bed for two days. Not aware that there was any fever at that time.)

Felt well until August to November, 1914. Attack of "rheumatism" in the fall; never any objective symptoms. Gradual appearance of craving after meals, which was attributed to extra studying. This "gnawing discomfort" was immediately after meals, at first of limited duration and later constant. "Would wake up with ravenous appetite, eat a large unusual breakfast, and then was ravenous all the morning." Strict milk diet and bismuth gave relief.

Jan. 10—Feb. 5, 1915, was a patient in a small Canadian hospital. Treatment consisted of rest and diet, or rather patient would eat but little—chiefly milk. Studies of the gastric contents were made.

Feb. 6—March 25, 1915, was in the Toronto General Hospital. Gastric analysis and roentgen examination were performed. Attack of pain after taking a fruit drink (was told that the gastric contents did not show acid). Baking soda did not give relief. Treated at first by starvation and in the course of ten days the diet was increased — gruel, junket, custard, whipped white of egg; to cream of wheat, poached eggs on toast, arrow root biscuits, etc. On first starting to eat, everything caused pain, but this gradually wore off. Milk and raw eggs relieved the gnawing pain. Was improving the last three weeks of stay in hospital, but felt as though the pain in the midepigastrium was just about to break out. Diagnosis stated to have been gastric ulcer.

March 25 to date (June, 1915) has been at home. Pain returned promptly. For three weeks remained in bed and on a restricted diet. Since then has adhered to a soft diet, save for occasional breaks. Calcined magnesia and antacids have relieved at times. Some gain in strength, but is able to eat very little.

Present complaint is, "I cannot eat without pain and so simply starve." There are very few things that do not cause pain.

Liquid perolatum worked beautifully on bowels for a while, but later diarrhea followed, so it was discontinued. The constipation seems to cause epigastric pain. Has had no emesis since December, 1914, except for three times after calomel. Never noted anything like coffee grounds, blood, or food of the previous day; maximum amount was less than one pint. Doubts if ever passed a "tarry stool."

Physical Examination—Thin, nervous woman. Pupils equal and react to light and distance. Mouth, glands, lungs, heart, and reflexes normal. Chest flat, costal arch narrow. Abdominal wall shows moderate sagging. Liver palpable one and on-half finger's breadth below costal margin in right mamillary line; upper border at seventh rib. Right kidney easily palpable, non-tender. Slight tenderness in epigastric region, no masses felt. Standing posture poor.

Hemoglobin 75%. Guiac test on stool negative.

Bismuth roentgen examination. No definite evidence of disease. Moderate cecal stasis. Well-marked gastric and intestinal ptosis.

The above patient came to Boston convinced that a surgical operation offered the sole remaining hope. A surgeon was consulted, therefore, but he advised that medical treatment be given a further trial. The patient previously had not treated herself fairly. On questioning about the diet, she learned that at times she dieted too strictly, living on nothing but milk and working at the same time, or even went from one to three days at a time without any food. She stated that at the Toronto General Hospital a positive diagnosis of gastric ulcer was made and yet in spite of seven weeks' treatment, she obtained merely temporary relief. At the time of her arrival in Boston, this patient was in a state of marked hypochondriasis and, as stated above, had fixed upon cancer in an incurable stage as her true complaint.

A diagnosis of visceroptosis with a possible chronic appendicitis was made and explained to the patient. Treatment based on this and the mental condition was followed by a rapid return to health; in six weeks this lady gained 20 pounds and returned to Canada. By winter she had gained 40 pounds and was enjoying the snowshoeing. Save for an operation for appendicitis, performed in 1918, her health continues satisfactory.

CASE 2. Woman, 26 years of age, single, seen January 7, 1916. Chief complaint is "run down" and "indigestion." "Has just had a crying spell and is so discouraged about her health." Several "colds" this past winter and is said to have some nasal catarrh. No cough or sputum at the present time. Gets tired easily and this has been especially noticeable the past four days. Appetite fair; is apt to have gas and some gastric discomfort if eats when tired. Notes the symptoms one-half hour after meals, sometimes, but they are generally irregular in time of appearance. There are periods when the patient can eat all sorts of food without discomfort. Bowels move daily, but require a laxative medicine every four or five days.

No history of "rheumatism," tonsillitis, or the infectious diseases of childhood.

Physical Examination—Lying comfortably in bed. Poorly developed and thin. Chest flat, costal arch narrow. Eyes, mouth, teeth, glands, and lungs normal. Heart, apex impulse in fifth space midclavicular line; percussion corresponds. Blowing systolic murmur at apex, transmitted to base and slightly into axilla. Pulmonic second sound not accentuated, louder than aortic second. Sounds good quality, action regular. Pulses equal, regular, rate 81, soft, fair volume and tension. Abdomen soft and tympanitic, no masses or tenderness. Liver and kidneys not palpable. Knee-jerks present and equal, no Babinski, no edema. Weight taken the following day) 96 pounds.

This young woman was definitely of the overambitious type. She was a member of two high-grade choral societies in addition to helping her mother with much of the housework and taking an active part in the work of her church. She was always ready to take on more work.

The effect of poor nutrition and generalized ptosis was explained to her. She was advised to diet to increase her weight, and to rest more. Some temporary use was made of tonic and digestive medicines. The fitting of a suitable corset was supervised and the patient was shown the correct posture of the body. There has resulted a definite improvement in health. The patient has made a considerable gain in weight and has no further digestive trouble unless she distinctly overdoes.

The heart is obviously the type that is termed "effort syndrome," or "cardiac neurosis." This patient is of interest chiefly as illustrating the handicap of visceroptosis to an ambitious young woman, and how large a part of this may be relieved by recognition of its cause and suitable treatment.

Case 3. August 22, 1919, woman, 37 years; married. Chief complaint, "indigestion," especially during the past four days. Sensation of lump in throat one-half hour after meals. This lasts an hour or more and then there is a sensation around the navel "as though someone was kneading me with sharp knuckles." On lying down, these symptoms are relieved, but they return promptly if the upright posture is resumed. Similar symptoms have been present at times in the past ten years, but have never been so severe.

Diet—Breakfast, cracked wheat and milk; lunch, an egg, milk, bread and butter, and a simple dessert. Has eaten but sparingly of summer vegetables.

Bowels move scantily several times daily; no diarrhea. Has tendency to constipation. Has chronic catarrh of nose and throat and is a little short of breath on exertion. No cough.

Was in "splendid health" in June, 1919. In July, attempted to hoe in garden and now is tired even on making beds, sweeping, etc., so that hands tremble. This over-fatigue passes in a day. Last catamenia two weeks ago; average two days in duration and of but slight discomfort. Best weight, 122 pounds, in 1903; one year ago was 98 to 100, and now is 105.

Past History—Began to wear corsets at the age of eighteen when patient was said to have had a slight curvature of the spine. Wore a stiff type of corset for three years and since then one of the light girdle type. Is "tired" if she doesn't wear her corset. At the age of 27 years was "generally run down"; couldn't walk without extreme fatigue and aching in the lower back. Given a diagnosis of uterine displacement and treated for two years with tampons and pessaries. Didn't recover full health until at the age of 31 an orthopedist tilted the heels of her shoes to correct a weak posture of the ankles.

Physical Examination—Poorly developed and thin. Pupils, mouth, glands, lungs, heart ,and knee-jerks normal. Chest long and narrow, with anterior flattening. Costal arch narrow. Abdomen shows moderate sag to wall of lower half. Liver, sixth space to two and one-half fingers breadth below costal margin in right mamillary line. Kidneys easily palpable.

Prompt improvement followed treatment. It is clear that the pelvic and foot conditions, treated in the past as separate entities, were but part of the general picture which the writer terms visceroptosis. One cannot but doubt the need for the gynecological therapy.

The case is introduced here because of the presence of points in the history which, together with the general appearance of the patient, strongly suggest the diagnosis. These points are the history of pelvic displacement, ankle weakness and especially the fact that the present gastric complaint was favorably influenced by rest and the horizontal posturs.

Case 4. Woman, 64, married, seen October 6, 1919 Is being treated for gastric ulcer by a "stomach specialist" in a western city.

Family History—Parents died of old age. One brother, two sisters, three daughters and one son living and well.

Past History—Had the usual children's diseases, never strong. Married at 27, childbirths easy. At 50 had pneumonia twice. Typhoid fever with good recovery at 51. Menopause at 53 and was quite miserable for two years. Hemorrhoids which were cured about fifteen years ago.

Digestive symptoms commenced more than ten years ago. Terms them "sick spells," with nausea and occasional regurgitation of mouthful of material always of a watery nature. These attacks occurred only when the patient was overtired. In 1915 underwent cholecystectomy with the removal of one large gall stone. The preoperative symptoms were chiefly about six attacks of severe pain in the course of two years. There was no jaundice. Patient is of the opinion that the operation has been of benefit to her health.

Present Illness—In the past two years has had "sick spells" three to four times per year. May be sick a month and it is usually several weeks before she is well. These "spells" are characterized by pain of moderate intensity and located in the epigastric region. The pain is likely to be present about bed time, is indefinite in type and duration, and apparently has no relation to meals. It never radiates to arms, shoulders or back, and is described as "not severe," and "it comes and goes."

About September, 1918, was a patient in a hospital in a western city under the care of a "stomach specialist." Gastric analysis was performed and a diagnosis of ulcer of the stomach given. Roentgen examination was not made until May, 1919. Patient was kept in bed for five weeks and treated by diet, alkalies, etc. A gain of 11 pounds in weight was achieved and the symptoms disappeared. Is now on a diet (of very bland type) and uses digestive powders (mostly magnesium oxide). Has again lost weight and is easily fatigued when the epigastric pain returns. There is very little gas in the stomach.

Bowels have always been inclined to constipation and do not move easily in spite of the daily use of laxatives. Micturition normal, occasionally once at night and six or more times per day. Urine about one quart per 24 hours. Best weight 124 pounds; was 105 when married and not above this in the past ten years; now 98 pounds. Not short of breath on reasonable exertion; no swelling of feet.

Physical Examination: Small, poorly developed and nourished woman of rather active, nervous type. One carious root in mouth, upper teeth false. Heart—Apex impulse well inside mid-clavicular line, drop-shaped by percussion. Soft systolic murmur at apex with short transmission, pulmonic second sound accentuated. Abdomen—Marked sagging of the lower half of the abdominal wall. Surgical scar extending from the right epigastrium to McBurney's point. Lower border of liver two and a half fingers' breadth below costal margin in right mamillary line, upper border at seventh rib. Right kidney easily palpable. Chest flat with narrow costal arch. Moderate lordosis of lumbar spine. General posture strikingly that of visceroptosis.

Blood pressure 135 to 60. Weight 98 pounds.

Roentgen examination was negative as far as any evidence of organic disease was concerned. There was marked ptosis, particularly of all the organs of the right side. The upper edge of the liver was on the level of the twelfth dorsal vertebra, while the lower edge came well down to the crest of the ilium. There was ptosis of cecum, ascending colon and hepatic flexure, but the splenic flexure was in normal position. General stasis existed throughout the colon.

The above history does not picture gastric ulcer. The evident ptosis on the physical and roentgen examinations, the appearance or increase of the symptoms when the patient was fatigued and the absence of roentgen evidence of organic disease indicate visceroptosis as the true diagnosis. A recent letter gives information that this lady has obtained satisfactory improvement following treatment based on the diagnosis of visceroptosis.

DIAGNOSIS.

The above case histories, it would seem, well illustrate the so-called "stomach case" in which visceroptosis is the cause. In accordance with the belief that a careful history is essential in the diagnosis of cases in which gastric symptoms present, one finds himself rather bewildered after having completed the anamnesis. The symptoms are so irregular that no disease is definitely pictured and one learns by experience that such a history is consistent with visceroptosis, which may often be suspected at the first sight of the patient. In the experience of the writer, it is common to find, in addition, a mental state of the neurasthenic type. If the physical examination shows well-marked visceroptosis, and the picture of no other disease is definitely present, the diagnosis becomes almost certain. But to be doubly sure, and especially in case the patient is impressed that carcinoma or some other serious disease exists, it is generally necessary to include roentgen examination. If this latter fails to disclose definite evidence of organic disease, one is in a position to talk just so much more convincingly to the patient. Thus, diagnosis is worked up from the history, physical examination, laboratory tests, such as the examination of the urine, blood, guiac test on the stool, at times gastric analysis and, if possible, roentgen examination after the bismuth meal, and, given the findings of visceroptosis and absence of those of other disease, the patient should be treated for the former. Of course, not every case of visceroptosis has gastric symptoms, and again the patient with visceroptosis may have gastric ulcer or other lesion. That is why each case should be completely studied.

Treatment should be directed toward the mental condition of the patient, toward his nutrition, and finally toward his mechanical handicaps.

In the experience of the writer, most patients coöperate better if some pains are taken to explain the nature of visceroptosis. A comforting suggestion is the statement that visceroptosis is not a true disease but rather a state of imperfect physical development. Many a patient is grateful to finally learn that there is a reason for an undue readiness to tire, etc., as sometimes the failure to appreciate the underlying cause has resulted in the patient being treated as lazy or as a quitter.

Those patients who have developed an unfavorable nervous state require all the suggestive therapeutics and personal attention suitable for that condition. These are the ones in whom negative roentgen evidence is of added value in convincing the patient of the absence of cancer, ulcer, etc.

The patients are practically always undernourished, and if they can be made to put on some fat, much benefit is gained. W. R. P. Emmerson, who has been so successful in his nutrition clinics, lists the causes of sub-nutrition as follows: physical defects, home conditions, over-fatigue, food habits, and insufficient food (poverty). One should investigate the patient's life with sufficient care to disclose and meet any of the above conditions.

Some patients have been underfeeding (as in Case I) so severely that an increase of food causes distress. In such a case, it must be explained that to continue on the insufficient diet will never produce a return to health, and that it is better to eat and suffer, as the discomfort will cease after a few days. Suitable digestive medicines are indicated, and in case of real distress, there may be need of a sedative to relieve gastric hyperesthesia. Better give tincture of valerian, bromides, or even codein or morphine, temporarily, and start the patient on an increasing diet. It is suggested that the amount of food intake to which it is necessary to bring the patient, be controlled by its caloric value (of course it should be readily digestible). Those not accustomed to estimate the caloric value of diets will find it quite simple if they will avail themselves of such helps as "Food Values in Household Measures," compiled by Franklin W. White,* and the food tables by H. D. Arnold.[2]

Constipation, which is usually present, commonly lowers the state of general health and the fecal load also mechanically assists in the downward drag on the intestinal tract. It should be carefully treated, especially by instructing the patient in the hygiene of the bowels, etc. The use of liquid petrolatum U. S. P. is often helpful in this type of case.

On the mechanical side, of course, the orthopedist has led the way, but in case it is not convenient to consult with an orthopedic specialist, it is quite possible for the general practitioner to meet the need. Some sort of support is needed for the sagging abdominal wall. A properly fitting, straight front corset can generally be made to give the desired support. It has always seemed desirable to the writer to train the patient to adapt some stock form of corset to her needs, as then she is in a position to continue this form of treatment indefinitely, even if she ceases visiting a physician.

The patient should be instructed how to stand correctly and, especially if young, should be given exercises directed towards improving the development. A recent article by Lloyd T. Brown[3] pictures, by the silhouette method, the striking improvement which may be obtained in a child after but three months' treatment. In the more severe cases, it is generally necessary to advise reclining for an hour after meals, in a posture which relieves the downward drag of the abdominal organs. Two positions which have been of use to the writer are: lying on the back with a pillow under the hips, none under the head, and the knees flexed; and lying prone with a pillow under the lower abdomen. Textbooks on orthopedics and the numerous articles in medical journals should be consulted by those desiring more detailed directions as to exercises, postures, etc.

SUMMARY.

In this paper emphasis is placed on cases of visceroptosis presenting "stomach symptoms."

A lack of good physical development and subnutrition are commonly associated with the condition.

Four case reports are given to picture the type of case under discussion.

The diagnosis is based on evidence obtained in the history, physical and roentgen examinations. Organic disease should be excluded in these and by suitable laboratory tests.

Treatment should be directed toward the patient's mental condition, toward his subnutrition, and toward his mechanical handicaps.

REFERENCES.

[1] Am. Jour. Med. Sci., 1918, Vol. clv, p. 85.
[2] Jour. A. M. A., Dec. 24, 1910.
[3] BOSTON MEDICAL AND SURGICAL JOURNAL, Feb. 19, 1920. See also the group of articles in this same JOURNAL for June 24, 1920.

THE ESSENTIAL FACTORS OF CANCER CAUSATION.

BY JAMES W. SHANNON, M.B., SAN DIEGO, CALIF.

(Concluded from page 609.)

The practice of the Japanese in regard to bathing differs from the methods customary in this country and Europe chiefly by reason of greater frequency, avoidance of cold water, and of the higher temperature at which the bath was taken. Inasmuch, then, as greater frequency in bathing implies a greater exposure to water, we should expect—other things being equal—the incidence of cancer upon the parts exposed to water in bathing (*i.e.*, upon the breast and skin) to be higher among Japanese than among Americans and Europeans, which is not the case. The figures hereinbelow (for which we are indebted to the aforementioned work of Dr. Hoffman) show that among the Japanese breast-cancers and skin-cancers are approximately eight times and four times, respectively, less frequent than among Americans.

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* Obtainable of F. H. Thomas & Co., Boston, Mass.

	JAPAN PER 100,000 POP.		U. S. REGISTRATION AREA PER 100,000 POP.	
	Males	Females	Males	Females
Skin	0.9	0.6	3.5	2.1
Female breast	...	1.8	...	14.3
Stomach and liver	48.4	31.4	28.8	30.5

In view of the fact that the incidence of cancer upon the stomach is higher among the Japanese than among Americans, we cannot suppose, either that the Japanese enjoy any racial or environmental advantages with respect to the disease, or that, under conditions of equal exposure to its causative agent, any such difference as that revealed by the above figures between the rate of cancer incidence upon the skin and upon the breast in Japan and in this country could arise. The facts represented in the foregoing table can, therefore, be regarded in one way only, namely, as evidence that *in Japan the skin and the breast are not exposed to the causative agent of cancer to the same extent or degree as in America.* If, then, we consider: firstly, that the skin and the breast are the only parts of the body exposed to water in bathing; secondly, that in Japan avoidance of cold water, and the use of water for bathing at much higher temperatures than is customary in America, is universal; and, thirdly, that as compared with Americans the Japanese are comparatively free from skin-cancer and breast-cancer, we cannot doubt that, upon the parts exposed to water in bathing, avoidance of cold water and the use of water at high temperatures tend to act as a preventive of cancerous disease.

Protozoal organisms are extremely sensitive to changes in their environmental conditions, and it is therefore very doubtful if any species could withstand exposure to a temperature so far in excess of that which is natural to them as the temperature of a Japanese bath for any considerable length of time. It happens, then, that, whereas Americans and Europeans bathe in water ordinarily containing large numbers of *living* protozoal organisms, the Japanese only expose themselves to water which, in so far as protozoal organisms are concerned, is *sterile*, or nearly so. Consequently, although exposure of the skin and the breast to water is greater among the Japanese than among Americans, exposure to the living organisms contained in water is less. In view of the fact that exposure to the living organisms in water affords a consistent explanation both of the low rate of cancer incidence on the skin and breast in the case of the Japanese, and its high rate of incidence in the case of Americans, we have no choice but to believe that the relation of water containing living organisms can possibly be otherwise than causative.

Cancers of the skin, like all other manifestations of the disease, result from contact of water with lesions and, consequently, are most frequent in those parts in which the opportunities for such contact are greatest, *i.e.*, on the hands and face. The skin of the face is attacked because—and especially in elderly persons—it is commonly the seat of lesions, and also because, as a matter of ordinary routine, it is, with the exception of the hands, exposed to water more frequently than other parts. It is well to remember that when the skin is inflamed, ulcerated, or tender, the use of a towel is likely to be painful, and that consequently there is a disposition to allow water to remain longer at the site of lesions than upon parts of the skin which are healthy. Indirectly, therefore, lesions contribute to their own chances of becoming cancerous.

Skin-cancers of the hands and other parts are due to the same principles of causation as cancers in general, and were it not that in certain cases they serve to illustrate the closeness of the association between lesions and water, they would have no particular interest. For a long time it has been known that workers engaged in occupations which require exposure of the skin of the hands, forearms, or other parts, to chemical, mechanical, or other injurious influences, as, for example, workers in x-rays, paraffin, creosote, tar, soot, etc., are prone to suffer from skin lesions which show a special tendency to become cancerous, but it seems that little or no attention has been given to the highly important fact that, in addition to causing lesions, these occupations, directly or indirectly, demand exposure of the injured parts to water. X-rays, for instance, cause "burns" which are exposed to water, partly for reasons of cleanliness, but more especially in the course of photographic work; paraffin, creosote, tar, etc., cause dermatitis, and being both irritating and difficult of removal, demand exposure to water, not only for reasons of cleanliness, but also for comfort; soot causes abrasions of the delicate skin of the scrotum through friction against the soot-impregnated clothing, and because the grimy nature of a chimney-sweep's occupation renders frequent bathing of the whole body imperative, and also because water tends to be retained in the folds and rugosities of the skin of the part affected and is therefore difficult of removal under any circumstances, but much more so when the parts are abraded or tender.

Cancers of "other organs, or of organs not specified," constitute about one-sixth of all cases of the disease, and in the absence of sufficient data, it seems reasonable to believe that the principles underlying their causation are in nowise different from those which we know to be operative in all other cases. The parts included in this class comprise cancers of the genito-urinary system, connective tissues, bones, cartilages, lymphatic and other glands, serous membranes, blood-vessels, and possibly the blood, all of which, while they may be the seat of primary cancer, are affected so rarely that, in comparison with the pylorus, cervix uteri, breast, etc., they seem to be almost immune from the disease. This is significant because of the fact that, whereas the pylorus, cervix uteri, breast, etc., are regularly exposed to water, such exposure in the case of the parts aforementioned is an exceedingly rare occurrence. It is well known that under certain circumstances protozoal organisms (infusoria) may infect the genito-urinary system, and when it happens that lesions are present at the same time the development of cancer becomes possible. Also, the connective-tissues, bones, glands, etc., are exposed to protozoal infection, the result of which may become manifest at the site of an injury or other lesion; or, protozoal organisms may be carried in the blood-stream, to some organ or part of the body remote from the seat of injury.

Although the foregoing is only an outline of the more prominent features of the cancer problem, yet it should serve the purpose for which it was intended, namely, to establish the fact that cancer is a preventable disease and to point out the course to be pursued in order to bring it under control. Theoretically, cancer is preventable by the elimination of any of the factors essential to its causation, but, for practical purposes it is necessary to consider only two, namely, lesions and water. Attempts to prevent cancer by the elimination of lesions have doubtless been successful in particular cases, but, as a measure for general adoption they are open to objection on the ground, firstly, that except in the case of the skin, mouth, and a few other easily accessible parts of the body, it is practically impossible to discover or eliminate lesions with the degree of certainty and precision necessary for the purpose; secondly, that it is impossible to guarantee the freedom of lesions from contact with water in the stomach and other important parts; and, thirdly, that after everything has been done that is possible in this direction, the causative agent of the disease still remains active. From these considerations it is obvious that there can be no prospect of controlling cancer on a large scale by the elimination of lesions.

The fact that the causative agent of cancer is conveyed to the body in water only renders it at all times completely subject to control, and enables us to prevent the disease with a degree of certainty which is absolute. From what has been said concerning the causation of cancer, it follows that the use for drinking, washing, bathing, and other personal purposes of water sterilized by boiling must, by destruction of the cause, insure the prevention of the disease. The experience of the Japanese suggests that a temperature lower than that of the boiling-point might suffice, but inasmuch as it is desirable to fix a standard which is safe, and at the same time easily recognized by all classes of persons, and since, moreover, the sterilization of water is of value in the prevention of diseases other than cancer, it would seem unwise to forego these advantages.

REFERENCE.

[1] "What We Know about Cancer," A handbook for the medical profession, prepared by a committee of the Amercan Society for the Control of Cancer, and published jointly by the American Society for the Control of Cancer and the Council on Health and Public Instruction of the American Medical Association.

A MEETING of physicians of New England who are interested in the historical and cultural aspects of Medicine, was called for the purpose of organizing a Medico-Historical Club in Boston, at the Boston Medical Library, on May 31. Four or five program meetings a year are contemplated.

Clinical Department.

TWO CASES OF ACARAPHOBIA.*

BY ABRAHAM MYERSON, M.D., BOSTON.

[From the Department of Nervous Diseases, Boston City Hospital; Department of Neurology, Tufts College Medical School.]

UNDER the names of acaraphobia, dermatophobia and parasitophobia, the dermatologists recognize a mental state which they loosely define as an obsession, neurosis or mania, which occurs with pruritus and which, concisely, is the fear of insects or bugs. It is probable, according to the description in the text-books and that given me by Dr. Thorndike, that the mental state, so designated, ranges from a simple fear allied with other phobias, to a true delusional state or psychosis. So far as I can find, the psychiatrists do not describe any mental disease associated in a definite way with skin disease, excepting pellagra, and here the symptoms are not linked in a delusional manner with the skin manifestations.

The term "haptic hallucinations" is used in psychiatry to describe the type of hallucination where the field of error relates to impressions received by the skin. In this condition the patient describes crawling, biting, burning, etc., sensations attributed to bugs, animals and various agencies. These hallucinations occur particularly in the toxic mental states such as cocainism, alcoholic insanities and some infections. In the two cases which I here report, the psychosis in each case was definitely associated with skin disease. In the one case with leucoderma or vitiligo, and in the other with a lesion resembling leucoderma but differing from it in its extraordinary transiency. The first patient presented a pseudo-paranoid psychosis of slow evolution, while there developed in the other case a hallucinosis and confusion associated with profound bodily disturbances.

CASE 1. Seen at Boston Dispensary and Boston City Hospital, forty years of age, a white male, Irish by birth and parentage, of sturdy physique and without known psychopathic heredity or relationship. Some years ago he noted a change in his skin, certain portions of it became white, and at the site of the lesion there was some slight itching. This itching he interpreted at first as due to the skin lesion, but slowly he began to consider the possibility of its causation through bugs of some kind. Gradually there developed a definite belief that the cause of the itch and the skin changes was some sort of insect despite the fact that he was never able to see the bug. He was able to feel them, however, and he was sure that they lived under his skin, coming out now and then to crawl over him and bite him, to infest his clothes, etc. His belief that there were bugs on his body was corroborated by the following "facts," as he styles them:

No matter where he is or goes, people around him begin to scratch their bodies and strike themselves as if they were killing insects. He has often noticed that a group of people will be sitting quietly, say in a street car, until he sits down amongst them or stands near them. After a short time, everybody gets uneasy, especially those nearest to him, and this uneasiness is succeeded by wriggling, scratching and striking themselves. This is caused by the bugs which jump from him to the others, and he feels that some people suspect him as the source of the bugs. Nobody acuses him openly, but some look at him in a peculiar way and move furtively from him.

Asked where the bugs come from, he says he does not know. They must live under his skin, for he feels them. Possibly the white patches are their habitat. To get rid of them he has bathed in all kinds of solutions and, according to his own account, has endangered his life thereby. He has frequently sterilized his clothes, and on several occasions has discarded perfectly good outer and undergarments, and has purchased entirely new clothes in the hope of getting rid of his tormentors. All this has been to no avail.

He has no delusions or persecution, does not accuse himself of any crimes or sins, has no ideas of grandeur and no other somatic delusions, no other hallucinations other than the tactile ones He works steadily, shows absolutely no memory loss or dementia; he yields to no arguments whatsoever, and seems quite disgusted when the physician fails to agree with him that there are bugs on his body.

Physical examination is negative throughout except for the distribution of leucodermic patches on hands, chest, abdomen and legs. These patches have been seen by dermatologists and diagnosed as leucodermic. They are increasing in size, the pigmentation disappearing constantly. Wassermann in blood, negative on several occasions.

Undoubtedly this psychosis represents a simple development of a sensation into a delusion through the propensity of human beings to explain their condition. Man seeks constantly to understand his sensations, seeking constantly that mental resting place which is an explanation Skin sensations are primordially related to insects, and a persistent sensation can easily be conceived as bringing about an idea of bugs. For untold centuries parasites have lived in the skin and hair and appendages of man, and it is only very recently, and in a relatively small part of the human population that parasites have been expelled from their habitat on the surface of the human being.

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* Read before the New England Society of Psychiatry.

The delusion that the bugs jumped to others is harder to understand until one objectively watches people or one's self. The term "objectively watches" is here used to mean watches them without regard to the meaning of their movements. It will be then seen that the scratch is perhaps the most common of human actions. Not only is it a result of fugitive sensations of remarkably frequent occurrence and of direct bodily origin, but it is almost inevitably related to certain mental states, such as boredom, fatigue, uneasiness of any kind, and perplexity. Wherever one goes people are scratching themselves, and especially is this prevalent amongst those of common manners, uninhibited in their reaction to sensation and emotion.

Further, the itchy sensation is remarkably contagious. Let one person scratch and those in his vicinity are impelled to do likewise. Undoubtedly this man communicated a part of his uneasiness to others by a sort of mental contagion.

CASE 2. Man, forty-two, married, two living children; one child died early in life. Wife is well, the family history is negative, habits are always good. His general life history is negative. Always well until September, 1918, when he had influenza-pneumonia. He was sick six weeks. During his sickness a peculiar pigment loss was noted on the knuckles of his hands. The loss was in discrete patches, varying in size and irregular in shape. There was a slight crawling and itching feeling in the affected areas. After his recovery the pigment gradually returned.

He went back to work but commenced to feel run down. To overcome this, he gave up his work as clerk for outdoor work on a wagon. He did not do so well at this kind of work as he expected, and in June, 1919 (nine months after the influenza), he became sleepless, very tired and restless; his appetite disappeared and he developed a diarrhea of mild intensity, with three of four ejecta per day Somewhat later there appeared excruciating pain in the knees, and when this subsided, burning sensations in the abdomen and feet commenced to plague him. Similar pains over chest and back occurred, and then all these sensations were gradually replaced by crawling, itching and biting sensations. These latter became the most important of the paraesthesiae and persisted. Perspiration was excessive and was associated with hot and cold feelings all over the body. A rash broke out all over the chest, back and abdomen, and on July 12, 1919, he went to the Peter Bent Brigham Hospital, where he stayed one month. I am indebted to the authorities of that hospital for allowing me to make an abstract of their records in his case.

"Very restless, very apprehensive, sweating freely. Pigment lacking over knuckles. Over the back and chest a Macula-papular red eruption thought to be due to bromide. Pulse rate, 110. Blood pressure, 132-110. X-ray of heart shows it to be wide in the region of the right auricle. Nervous system shows a coarse tremor with a few mystagamoid twitches of the eyeballs in the end positions. Knee-jerks very lively, but equal; also ankle jerks. Cremasters and abdominals sluggish. Urine, 1200 cc., 1018, hyalin and granular casts with some white and red blood corpuscles. Blood, white cells 10,800, 58% polymorphs., 37% lymphocytes, 5% mast cells. Wassermann reaction negative in blood. All tests of spinal fluid entirely negative.

Gastric contents show lack of free acid. Stool shows much mucous. The x-ray of the gastrointestinal tract showed a colonic stasis, as it took barium twenty-four hours to reach sigmoid and forty-eight hours to reach rectum. Metabolism plus 25."

Hyperthyroidism was suspected at the Brigham Hospital because of increased metabolism, the gastrointestinal symptoms, the rapid pulse and the nervousness. He became more sleepless, restless and nervous, and because of this was sent to the Psychopathic Hospital for observation as to his mental condition.

His stay there revealed nothing new, and at the end of ten days a charitable organization sent him to a Convalescent Home. There he stayed six weeks and it was there that his mental symptoms first reached prominence. Because of these symptoms, he was sent home, where I first saw him October 1, 1919.

Physical Examination—A much emaciated man, five feet eight inches tall, lying quietly in bed. The main findings were these: Pupils somewhat dilated but reactions O. K. Reflexes throughout body markedly hyperactive with wide zone of elicitation. The muscles when tapped swelled at the point of stimulation and remained angularly elevated. There were no B, G, O, ankle clonus, paralysis, ataxia or sensory change.

Over knuckles and over chest and back were discrete, irregular patches without pigment, smooth, not elevated and painless. These corresponded in appearance with leucoderma. The skin on the chest, especially over abdomen, was unusually and diffusely dark. The mucous membrane showed no change. The blood pressure was 130-100, heart rate 100, temperature, 99. Chest negative.

Mentally, he was oriented for time, place and person. His memory was good for very remote events and for the more recent events he claimed that the events of the last two weeks were quite jumbled in his mind. He remembered and told in detail a hallucinatory episode: A dead man entered his room at the sanatorium and they had a fight in which he destroyed the dead man and hid him under the bed clothes. There his victim became very active. Finally people burst into his room, his opponent disappeared, and he went to sleep.

He had very definite haptic hallucinations and delusions. There were large and small bugs on his body and they made their home in his skin. They bit and scratched him, with only an occasional let-up for a few hours or a day. He often killed them by striking his body and could feel them flatten out under the impact, yet he could never see them or hear them. Sometimes they left his body and crawled on the sheets and blankets. This he could tell by the little movements of these furnishings.

He dismissed without argument the suggestion that this was a mistake and could not be. He was pleasant, friendly, and wanted to be cured of his weakness, his diarrhea and sleeplessness. He attributed most of his troubles to the bugs. His weakness, diarrhea, rapid pulse, and slight temperature suggested tuberculosis, but there was no evidence to corroborate this suspicion. Endocriminal disturbances were so prominent, to wit, the above-mentioned symptoms, the increased metabolism, the change in skin pigmentation, the restlessness, the myoedema, that this was considered the most likely diagnosis, though obscure. On account of his mental condition and his great weakness, he was sent to a private hospital for his mental disease. He stayed there eight weeks, received excellent care and feeding, and, to the surprise of everybody, made a remarkable improvement.

Mentally, he was entirely clear and had dismissed the idea of bugs. This was coincident with a remarkable change in the form of leucodermic patches. These presented the appearance of having been filled in by new skin containing normal pigmentation. There was only left of the former patches a few very small areas on back and chest that were still without pigment. The paraesthesiae had disappeared, he had gained weight, his temperature was normal, but the pulse was still 100. Though not nearly so strong as normally, he was able to get up and to walk. He perspired profusely and now and then had diarrhea.

In February, 1920, he was shown before the Boston Society of Psychiatry and Neurology, and at that time he was sleepless and restless and had a pulse of 110. Blood pressure 130-100. Blood picture was negative. Urine normal. Leucoderma had almost disappeared, but the darkened skin of chest and abdomen was still noticeable. Mentally he was clear and described his hallucinations with detail and interest. He ascribed them to the crawling, itching and biting sensations and to confusion of mind. He said that they disappeared gradually. He had not noticed any relation to the pigment loss or to the hyper-pigmentation.

In March, he was again losing ground, had a troublesome, hacking cough. Reëxamination showed definite evidence of well-advanced pulmonary tuberculosis. He was sent to the Boston Consumptives' Hospital and there died. No post mortem was held.

In discussing this case there are so many points of interest that one hardly knows where to begin. In the first place, the influenza-pneumonia was associated with a temporary de-pigmentation of an unusual kind. Later on, there appeared the evidence of a toxic-exhaustive state, with both de-pigmentation as described and hyper-pigmentation. The de-pigmentation was temporary and lasted about as long or perhaps somewhat longer than the psychosis, but the hyper-pigmentation persisted. Pellagra, though considered, was easily ruled out. In the first place, his diet was not different from the ordinary nor had he been exposed to the sun. In the second place, the patches were pale, smooth, located mainly on chest and back, whereas in pellagra the lesions are rough, diffuse, red like sunburn, and involve face, shoulders, genetalia and hands. Moreover, in pellagra the mental symptoms do not take the form they did in this case.

Addison's disease is strongly suggested by the emaciation, the weakness, the hyper-pigmentation and the tuberculosis, but the blood pressure was higher than in Addison's disease, and the mental state very unusual. Furthermore, disappearance of pigment of a temporary and recurring kind does not, so far as I know, occur in Addison's disease.

Hyper-thyroidism was of course a feasible diagnosis. The increased metabolism, the emaciation, the rapid pulse, tremor, nervousness, diarrhea, all go well with this condition. It seems likely that there was poly-glandular disturbance and that the injury was diffuse through the organism. Whether the exciting cause was a damage done by the influenza and the tuberculosis was a later and secondary disease, or whether tuberculosis existed throughout the course of the illness is a question that cannot be settled. The lack of post-mortem evidence is to be deplored, for information of great value would probably have resulted from an autopsy.

It seems likely, or at least I permit myself the liberty of speculating to this extent, that the delusion of bugs was founded on an interpretation of an unusually bug-like paraesthesiae. A certain amount of confusion aided the establishment of an explanation into a delusional state. From such sensations to the explanation as bugs, is the most natural step in the world and one deeply rooted in universal human experience.

These two cases point out that there is an important group of diseases theoretically which have not been studied by psychiatrists. It is desirable that the acaraphobia of the dermatologists receive the attention of psychiatry, for here are mental symptoms definitely referable to physical conditions in a manner that is at once unique and important.

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Medical Progress

RECENT PROGRESS IN PROCTOLOGY.

BY T. CHITTENDEN HILL, M.D., BOSTON.

DIAGNOSIS.

ZOBEL,[1] in his article on "The Diagnosis of Anorectal Diseases," calls attention, in his opening paragraph, to the importance of careful routine examination of the anorectal region in all patients having anorectal symptoms. He says, "It is regrettable that too frequently the patient's idea as to what ails him is accepted by some of them (physicians) without further questioning, and without thought of any necessity for examination." "Pain, bleeding, itching, protrusion, the discharge of pus or mucus, constipation and diarrhoea are the principal symptoms complained of by those having anorectal trouble." Under these eight headings, he goes with some detail into the question of the lesions of which they are symptoms.

Of *pain* he says, "Uncomplicated internal hemorrhoids rarely give rise to pain. However, when the hemorrhoids become inflamed, ulcerated, or strangulated, pain then becomes a predominating symptom. One of the most common causes of anal pain is fissure of the anus. The true anal fissure is to be differentiated from the fine linear cracks often observed in the mucocutaneous tissues bordering the canal. The latter generally cause itching more than they do pain." Of rectal cancer, he says, "Pain is usually absent. The disease may go on to even complete obstruction of the bowel—that is, when it is located in the ampulla, or in the upper third of the organ—without causing more than an indefinite sense of uneasiness in the parts. Should such a growth become ulcerated, then pain commences. On the other hand, when the anal region, which is especially endowed with sensory nerves, is involved, there is early and constant acute pain, to which often is added most disagreeable, heavy bearing-down sensations. It may here be urged that whenever there is rectal pain the possibility of cancer should be ruled out." Among other causes of pain, he mentions inflammation and ulceration of a crypt of Morgagni, a foreign body impacted in the anal canal or imbedded in the anal mucosa, acute proctitis, rectal neuralgia, the rectal crisis of tabes, and the rectal aura of epilepsy. In a fistula, unless the external opening closes, thus allowing the sinus to become distended with pus, there is seldom pain; and abscess about the margin of the anus, in a crypt of Morgagni, or under the mucosa of the upper border of the internal sphincter muscle may cause so little pain as to be often mistaken by the patient for simply painful "piles."

Under *hemorrhage* the author goes into the importance of investigating this symptom, which may come merely from congested and eroded internal hemorrhoids, or may be the first warning signal of the presence of a malignant growth; or may be due, on the other hand, to multiple polypi of the bowel wall, hemorrhagic and amebic colitis, the friction of clothing against a chronically prolapsed rectum, the scraping of hardened feces at defecation on the fine linear cracks in the tissues immediately surrounding the anal orifice, simple fissures, injuries from foreign bodies, or roughly inserted syringe tips, rectal thermometers and examining instruments.

For ascertaining the cause of *pruritus* the author emphasizes the need of more than mere inspection of the perianal skin, a proctoscopic examination being as imperatively urgent here as with other rectal affections, for while sometimes the itching may be due to purely external causes, such as dermatitis, eczema, herpes, pediculi, parasites, etc., at other times it may be concomitant with some constitutional trouble;

it may be a reflex from disease in other parts, particularly in the genito-urinary organs; or it may be caused by an anorectal lesion, such as fissure, ulcerations, abraded internal hemorrhoids, small thrombi under the mucosa of the anal canal, subacute proctitis, catarrhal colitis, rectal growths, hypertrophied papillas, disease of the crypts of Morgagni, small blind fistulas, etc, or infection of the perianal skin by the streptococcus fecalis.

The causes of *protrussions,* Zobel enumerates as prolapse, marginal abscess, an anus bulging from fecal impaction, foreign body, condylomata, an epithelioma of the anus, or a pedunculated growth, any of which may be responsible for protrusion, rather than "piles," which to the laity, and evidently many of the medical profession, is the commonly accepted cause.

Pus appears from a fistulous tract, a rectly ruptured abscess, severe ulceration of the bowel mucosa in colitis, granulations of small ulcerations or fissures, and in malignant or even benign growths.

Mucus may be an early warning of malignancy; on the other hand, in almost every variety of colitis there is more or less excessive formation of mucus; fecal impaction, a foreign body, or growth may, by irritating the bowel mucosa, accelerate its abnormal production.

Constipation. This very common symptom, so little a matter of concern to patient or physisian, should be investigated by digital and proctoscopic examination for the underlying cause, which may be a tightly closed anal orifice with hypertrophied sphincter muscles, due, perhaps, to the presence of an ulcer, a fissure, a diseased crypt of Morgagni, or inflamed and ulcerated hemorrhoids; or, higher up, fecal impaction, an obstructing foreign body, a growth, a stricture, a deviated coccyx which pushes into the cavity of the rectum, an entire absence of the coccyx which allows of the formation of a retrorectal pouch in which the fecal matter accumulates, or a pelvic mass situated anteriorly and so occluding the rectal lumen that when it is accompanied by markedly hypertrophic valves of Houston, it is apt to give the examiner the impression that a well-developed stricture of the rectum is present.

Of *diarrhoea,* the writer says: "It may be taken as an excellent, and a very safe rule, always to make a digital and proctoscopic examination in every case where, notwithstanding intelligent treatment, a diarrhoea has lasted longer than a week. This may have to be supplemented by a fluoroscopic and radiographic examination, if no cause be discovered in that part of the bowel in the range of the examining instrument." "Diarrhoea is usually the main symptom of colitis; it may also be occasioned by new growths, a bowel filled with hard, impacted feces, strictures, ulcerations, etc."

In conclusion, Zobel mentions the simple apparatus necessary for a complete anorectal examination and calls attention to the delicacy of the procedure in passing the sigmoidoscope through the valve of O'Bierne, in examination of the higher portions of the colon, and the consequent need for gentleness and caution in manipulating the instrument.

More complete examinations and more considerate treatment in rectal work are also urged by E. G. Martin[2] in his paper, "Differential Diagnosis in Anorectal Disease," read before the Wayne County Medical Society. Like Zobel, he laments the fact that salves and suppositories for piles are given a patient, whether he has rectal hemorrhage, itching, or anal pain, without first submitting him to a thorough examination. He speaks hopefully, however, of recent progress in proctology within the last few years and the recognition of its importance.

HEMORRHOIDECTOMY AND NON-OPERATIVE TREATMENT OF HEMORRHOIDS.

We find, among the German writers on the treatment of hemorrhoids, that Pozenel[3] still favors the ultra-radical operation of removal of the varices, as well as the whole hemorrhoidal plexus, by the Whitehead method. He says that in difficult cases the Whitehead operation deserves preference over all others, such as cauterization of the isolated tabs, dilatation of the sphincter, injection of carbol sublimate, or alcohol, ecrasement, ligature, or internal medication.

The Whitehead operation has been justly condemned by all proctologists, and the great majority of general surgeons have abandoned it altogether. It is mentioned here as a warning to young surgeons to whom this method of circular incision seems to have a strong appeal.

Boas,[4] on the other hand, inclines toward treatment. "While the operative method of treating hemorrhoids has for a long time attracted more attention and leads in most cases to cure," he says, "there has never ceased to be an inclination on the part of the patient toward a non-operative method." The method most familiar to the author and most approved by him, is injection with carbolic acid. He has used this for twenty years and not observed any complications. He does admit, however, that oftentimes there was a recurrence which made necessary a repetition of the treatments.

I formerly employed the carbolic method in selected cases, but now much prefer quinine and urea hydrochloride 5-10% solutions, as advocated by Tirrell. It has the same action on the hemorrhoidal tumors and has the added advantage of being a local anesthetic. If the precaution is taken to inject in the upper portion of the pile, no pain, sloughing, or oedema of the external skin will take place. If, however, the injection is made too low, some of the solution will infiltrate the contiguous external hemorrhoid, producing a very painful oedema.

Of the writers in this country, L. J. Hirschmann[5] is an exponent of hemorrhoidectomy under local anesthesia. "While practically every operation in the realm of proctologic surgery can be performed under local or regional anesthesia, there is nothing which has responded more satisfactorily to surgical relief under local anesthesia, than the radical treatment of hemorrhoids." He urges as complete preparation as though for general anesthesia, and a preliminary narcotic as of the utmost importance in allaying the fears of the apprehensive patient, and calls attention to the fact that a three or five-minute pause after injection will greatly enhance the value of the anesthesia; that failure to procure satisfactory results by some surgeons has been due to their anxiety to proceed before complete anesthesia has been induced. After circumanal anesthesia is complete, traction on four Pennington triangular forceps, which grasp the surrounding skin at the four points of the compass, everts the anus and exposes the internal hemorrhoids, if they have not already been prolapsed. These are now injected with a sufficient quantity of the solution to distend them one-half inch beyond their junction with normal mucosa. The most dependent hemorrhoid is grasped with forceps and drawn down in its long axis, then a right-angle-curved blunt-pointed ligature carrier threaded with No. 2 catgut is passed into, underneath and around the hemorrhoid at its juncture with healthy mucous membrane and tied. All the hemorrhoids are similarly ligated before excision to prevent operative hemorrhage. The hemorrhoids are then excised from without inward, care being taken to remove all the hemorrhoid, saving as much of the normal mucosa as possible, and cutting the pile away one-fourth inch below the ligature. The wound is better left open and nothing more need be done to it except trimming the excess mucous membrane in order to leave a longitudinal wound. If there is any oozing, the wound is united with a continuous running stitch."

The author recommends this operation as a simple, satisfactory and thorough one and gives with much detail the steps of the operation, with appropriate illustrations.

PROLAPSUS RECTI.

T. Wingate Todd[6] considers the rectal prolapse of infants from an anatomical point of view in an article in the *Annals of Surgery*, 1920, giving as the reason for the frequency with which this affection occurs in children the relative position of the rectum with the bladder and uterus, in that the latter organs are higher at birth and later descend into the pelvis. This, together with the straight character of the sacrum in the infant, by reason of which the organ is not relieved from pressure of overlying viscera as in the more curved sacrum of the adult, puts the rectum at a mechanical disadvantage. He finds, however, no great laxity of the recto-sacral attachments in the infant than in the adult, and says, "In both, there is sufficient play in the rectal stalks to allow a certain limited prolapse in the presence of other accessory causative factors and without damage to the nerves and vessels themselves. In such instances the prolapse must obviously be temporary, and it would appear unnecessary to resort to operative measure for its treatment."

Turtle[7] reports a case of "Sudden Complete Procidentia Recti in a Young Adult Male." The patient was 26 years old and, except for the fact that when a very young child the rectum came down and had to be replaced, had had no trouble up to the day previous to admission to the hospital, when, during defecation, the bowel suddenly came down. The day after admission the mucous membrane of the prolapse (which was a firm, oedematous egg-shaped mass, 5x4 inches) was beginning to ulcerate in places and the entire prolapse was excised. There was incontinence of feces for one month, but two months after operation control had been fully established.

In this connection I recall a case of sudden, complete procidentia of the rectum occurring in a man about 35 years of age, following an alcoholic debauch. The whole rectum was protruded for four or five inches. It was thought that some radical procedure was indicated, but because of the condition of the patient, operation was postponed and the procidentia held in place by strapping the buttocks After the patient was able to be about, it was found that the sphincters had firmly contracted, and, so far as I am aware, there has never been any further prolapse. I heard from him four or five months later and at that time the rectal condition was good. This would suggest the advisability of trying palliative treatment in all cases of procidentia of short duration.

Speed[8] demonstrates a case of a male 40 years of age, who had had a protrusion, appearing five years previously and reappearing frequently and increasing in size. For a month it had not been reducible and there was bright red blood at stool. There were no hemorrhoids on the extruded mucous membrane and no ulcers, the slight amount of hemorrhage coming from the granulating surface. All the bowel coats had descended, but the sphincter had not lost its power; it still grasped slightly. Speed's method of treatment in this case was, first, to sear the mucous surface in the direction of the longitudinal axis of the bowel with the edge of the glowing cautery knife, making several of these linear cauterizations, always in the long axis, and burning through the mucous surface and the deeper tissue and passing across both sides of prolapsed fold; and then, when these burned lines were complete, reduction of the extrusion into the rectum, keeping it reduced and held in normal position, and the anus sewed up with a pursestring suture for seven days. "When the eschar sloughs and granulations with cicatrization follows along each of these burned lines, we may reasonably hope to obtain firm adherence of the mucous surface to its supporting tissues. No stricture can follow because the burns have been in the longitudinal axis, but the cicatrization will cause some tightening of the rectal lumen, and with the rectum held in normal position and the anus sewed up, at the end of seven days the sphincter will have regained its power." Speed's patient left the hospital after three weeks and up to that time there had been no recurrence, nor had he returned to the hospital up to the time of reporting the case, as requested to do if there was any sign of the old disturbance.

IMPERFORATE ANUS.

A. D. Bevan[9] and C. Skinner[10] each report one case of imperforate anus in a new-born child. In both cases there was communication between the bowel and the urinary bladder. In Skinner's case, a colostomy was done six hours after birth; the child lived three weeks and appeared to be doing fairly well, but rapidly failed after that, and died within two days. This author says of this type of case that the majority of these children are defective in other portions of the anatomy and nearly all of them die. In Bevan's case, the blind end of the rectum and bladder formed one large cloaca, and he lays stress on the danger of death from ascending nephritis under these circumstances unless an immediate colostomy is performed. Skinner's intention was a temporary colostomy, and after the child had recuperated, to make an effort to establish the normal opening. Bevan, however, thinks it preferable to have an inguinal anus, as attempts at dividing the bladder and rectal cavities and attempting to make a new rectum in normal position have not been successful, and any result obtained will probably not function as satisfactorily as an inguinal anus.

GLANDULAR POLYP.

Among the French writers, Henri Blanc[11] reports a case of giant glandular polyp of the rectum. The patient was a neuro-arthritic, 57 years of age, with digestive troubles suggestive of enterocolitis, as well as persistent tenderness in the right side, progressive emaciation, and a right inguinal hernia. He was operated upon 12 years previously for anal fistula and at the same time the hernia was repaired and an appendectomy done. Following this operation the patient was much improved, but at the end of four years appeared again complaining of local disturbances, consisting of two movements every morning, the first of which was nearly always large, glairy, and whitish, but never bloody; the other, nearly normal; and towards the end of the day and sometimes during the day, the passage of large, glairy, whitish masses without any fecal matter. Some days the effort of voiding urine brought about an involuntary expulsion of rectal secretion.

Palpation disclosed a very irregular, flabby mass, on the anterior half of the rectal wall, about 9 to 10 cm. above the anal orifice, giving the impression of a spongy mass issuing from the rectal wall. Rectoscopy gave the diagnosis: Multiform glandular polyp, of vilous tumor type, perfectly benign in character. Rectoscopy showed, in fact, a series of tumors, resembling in shape and appearance an elongated strawberry, without ulcerations, or hemorrhage, and forming together a tumor with multiple, irregular fringes, soft, and attached to more than half the circumference of the intestine. One of these fringes was excised during rectoscopic examination, and microscopic diagnosis confirmed the diagnosis.

At operation the polypous fringes were excised nearly level with the mucosa. Following operation there was considerable relief and all the rectal discomforts disappeared; but at the end of six months reappeared and another examination showed some polypous fringes still existing. Under local anaesthesia the last vestige of the polyp was resected to the level of the mucosa. Examination of the portions resected showed, as before, that the tumor was benign.

HEMORRHAGIC AND PURULENT RECTOCOLITIS.

Edouard Antoine,[12] in an article entitled "Quelques Formes Cliniques des Recto-Colites Hemorragiques et Purulentes," has given the results of attempts to isolate the pathogenic microörganism of the three types of hemorrhagic and purulent rectocolitis, which he classifies as follows: (1) hemorrhagic rectocolitis (rectocolitis with hemorrhages predominating); (2) purulent rectocolitis (purulence predominating), and between these two groups a series of intermediary cases; (3) hemorrhagic purulent rectocolitis.

Antoine cites a case of each type and goes on to say, "These three clinical aspects of hemorrhagic and purulent rectocolitis do not resemble in any respect already known dysenteric or dysenteriform conditions. Moreover, they present a certain number of common characteristics which make it proper to group them: at the very beginning a short, ill-defined subfebrile attack of gastroenteritis, occurring in patients with marked constipation; from then on, intestinal hemorrhages or purulent evacuations, which may occur alone, alternately, or associated, and which make up the different clinical types that we have described. There may even be absence of the dysenteric syndrome: no pain, no fever, no mucus, no marked deterioration in the general condition. Finally, there may be even a chronic evolution—an illness of a hopeless persistency, momentarily relieved, but coming on again in spite of every medical treatment employed. There then seems to be a question of deep infection of the mucosa of the terminal portion of the large intestine by a tenacious microbe, or one which re-infects this region periodically under little known influences. Moreover, it is to be noticed that the anatomical lesions revealed by rectoscopy are similar although of variable degrees. Sometimes one sees intense congestion of the rectal mucosa, with small, intensely vascular petechial spots. With the affection at a more advanced stage the spots become confluent, often attaining blotches of hemorrhagic suffusion of great size. Then, sometimes there is an oedema of the mucosa and the congested spots are like ulcers covered with a muco-purulent coating. In all these cases the mucosa seems very thin and bleeds at the least contact. These lesions explain perfectly the frequency and the predominance either of hemorrhage or pus. We have not found actual ulceration."

"Practical and repeated research for ameba, spirilla, or other intestinal parasite have remained absolutely without result. Our patients did not show any sign of syphilis or tuberculosis; the Wassermann was negative; nor were there any signs of intoxication by urea or by medicaments (mercury, arsenic, colchicum, etc.). Finally, serum agglutination tests by Eberth's technique, both for paratyphoid and dysentery bacillus, remained constantly negative. Our microscopic examinations have shown, however, in all these cases, constantly and distinctly, an infection of the rectocolon by abundant polynuclears, often in a condition of phagocytosis. Bacteriological research begun in this way has permitted us to find the constant presence of the pathogenic germ so that we have been able to isolate it, and are now in the process of identifying it and experimenting with it."

GUN-SHOT WOUNDS.

Among the articles on war surgery is Arthur Keith's[13] "Gunshot Wounds of the Great Bowel and Rectum." Specimens showing the nature of bone injuries accompanying wounds of the pelvic viscera and the widespread effects of modern missiles of high velocity were shown by him at a meeting of the Royal Society of Medicine, and, following the exhibit, Sir Gordon Watson, in discussion, noted the fact that injuries in this region are very frequently followed by infection of the pelvic cellular tissue and are then extremely fatal, and that for this reason colostomy is advisable for all wounds of the rectum. The high mortality of rectal wounds is due to the fact that they are complicated by wounds involving the bony pelvic wall, bladder, intestines, buttocks, hip-joint, etc. He advises colostomy even though small intra-perineal wounds may be sutured; and in large lacerated wounds, which are usually associated with perforation of the small intestine and extensive injury to the pelvic wall, the mortality is so high that in some instances an abdomino-perineal excision has been performed in the hope of preventing acute sepsis. Purely extra-perineal wounds require free excision of the soft parts and liberal drainage of the damaged bowel in addition to colostomy. Perineal wounds involving the anal canal without peritoneal injury should be treated like fistula by free excision and division of the sphincter.

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Two Days' Conference Indicates Broad Anti-Tuberculous Program. — The range of subjects discussed at the Seventh Annual Conference of the Massachusetts Tuberculosis League, held in Boston, May 13 and 14, indicates that anti-tuberculosis societies of the state have adopted a broad public health program and are especially stressing preventive work with children. More than half of the time of the convention was taken up with the discussion of nutrition work and means and devices for making the teaching of personal hygiene attractive and effective with children. Such speakers as Dr. W. R. P. Emerson of Boston and Dr. Henry D. Chadwick, Superintendent of the Westfield Sanatorium, declared that the most promising means for the real prevention and control of tuberculosis lies in the field of the pediatrician and that, without doubt, the most effective effort in this field is intelligent, adequate attention to the mal-nourished child.

The report of the work of the League showed great activity during the past year. Money has been raised in nearly every city and town of the Commonwealth for the support of voluntary anti-tuberculosis work. As a result of this support, active programs touching every community in the state are rapidly being established. The state is being organized on the county and district unit plan outside of the larger cities. This enables the employment of expert paid service which is now coöperating with the state and local authorities and other health agencies in work for the prevention and control of tuberculosis.

The Modern Health Crusade in the public schools, work with under-nourished children, tuberculosis surveys, and consultant clinics, in addition to a continuous program of health education, are now being carried on by many of these organizations. As Commissioner Kelley remarked, "there does not seem to be a lessening of interest in tuberculosis, but rather a deepening and broadening of ideas of the program which must be carried out in order to control the disease"

The constitution of the League was amended so that hereafter governmental authority will be vested in a board of directors, a majority of whom will be elected by affiliated organizations, thus insuring responsive democratic government.

The following officers were elected for the coming year: For President, Dr. Edward O. Otis of Boston; for Vice-President, Mr. Henry S. Dennison of Framingham; for Honorary Vice-Presidents, Dr. Walter P. Bowers of Clinton, and Dr. Eugene R. Kelley of Boston; and for Treasurer, Mr. Arthur Drinkwater of Cambridge; for members of the Executive Committee to serve for three years, Dr. Parker M. Cort of Springfield, and Dr. Francis P. Denny of Brookline.

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Massachusetts had 678 cases of diphtheria and forty-four cases of typhoid fever in April, 1921—arguments for the Schick test and anti-typhoid treatment.

THE BOSTON
Medical and Surgical Journal
Established in 1828

THURSDAY, JUNE 16, 1921

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Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

THE ONE HUNDRED AND FORTIETH ANNIVERSARY OF THE MASSACHUSETTS MEDICAL SOCIETY.

The meeting this year was limited in scope, because of the demands on the time and energy required of many members in providing for the voluminous sessions of the annual meeting of the American Medical Association in Boston. The Council meeting was held on Tuesday, May 31st, at 5 P.M., and the time required for the transaction of business was over two hours. This meeting was attended by a large number of members who showed unusual interest in the executive affairs of the Society. This meeting will be reported separately.

The Shattuck Lecture by Dr. Haven Emerson, was a scholarly presentation of the practical problems incident to the prevention of heart disease.

The presentation of a proposed change in the by-laws at the general meeting Wednesday morning, developed doubt as to the effect on the election of officers of the Society involved in the wording, and therefore action was postponed. While it is clear that officers who are already members of the council would be eligible for reelection, there may be a question as to the legality of electing officers in the future who might not be members of the council at the time of an election. The President raised the question of the desirability of continuing the custom of sending delegates to meetings of other state societies, because of apparent disinclination of some fellows to accept this responsibility. It was, however, the opinion of several fellows that the custom was of distinct value and no action was taken.

The first paper read, by W. P. Bowers, was, to some extent, a résumé of facts and arguments which are under discussion relating to maternity benefits and infant welfare, but presented, in addition, a plea for this state to develop and and control activities which may result in better conditions, and brought out the influence of the incidence of syphilis in causing still births and infant mortality and morbidity. The underlying recommendation being that every effort should be made to secure unanimity of opinion in the profession as to the best methods to be employed for the purpose of securing better results, which seem to be demanded.

Dr. S. B. Woodward forcefully presented the history of the efforts to secure better vaccination laws, and showed the lack of logic exhibited by the opponents. His address abounded in pointed illustrations of the weaknesses of arguments against vaccination and the reasons for active support of efforts to save the people from the dangers of ignorance and prejudice. His work on legislative committees and exhaustive study of the subject entitles him to speak with authority.

Dr. Goldthwait, in his address, brought out the great need of educating the children how to develop sound and effective bodies, drawing illustrations from the 46 per cent. of defective men from this state in the late war, and clearly differentiated the various types of children, showing the tendency of each group to fall into habits of posture and bodily carriage which not only decrease efficiency, but induce disease. Photographs of the different types illustrated both the natural build of certain defective children and the fundamental principles involved in correcting them. He clearly explained the problem involved, which is very simple and which, if understood and applied, makes such great improvement in health and efficiency.

Dr. Edsall contrasted the American conception of premedical and medical study with that of Germany, for example, and brought out the different ideas of students of these questions. In contrasting our scheme with that of Germany, he explained that whereas a youth in this country could go through our lower grades and be left free to take up any study afterward, the German child was restricted in his early years to the amount and character of the courses, according to definite purposes.

In considering medical education, it was explained that students have so much work imposed on them in the medical schools that they should have mastered the elementary subjects of chemistry and biology before taking up the study of medicine, for the inadequately developed mind was handicapped and had to devote time to the fundamental branches, thereby becoming confused and distracted. The effect of Dr. Edsall's address should be to lead physicians to use all possible influence in urging prospective medical students to secure a sound education in fundamental subjects, before entering upon the study of medicine.

The annual address, delivered by Dr. Anthony, was original in scope and ideas. He presented a plan whereby physicians may be relieved of a large proportion of unremunerative work, and the people much more efficiently served. Under this plan it was shown that physicians contribute millions of dollars worth of services to those who cannot afford to pay, but that under state hospitals, the expense to the state would not be extravagantly large, and physicians would be relieved. This address was published in full in the Journal of June 2.

The annual dinner was attended by about two hundred fellows and guests. It was both enjoyable and inspiring. The President introduced the speakers in a most graceful manner.

The Governor brought a message of encouragement from the Commonwealth and suggested that physicians being in close contact with the people, could treat effectively the public mind so that the spirit of discontent often observed, might be dissipated, and citizens brought into normal relations with the great needs of the present time. The greatest opportunities exist for public service, and every person should be brought to realize the responsibility of taking up burdens which individuals can carry better than the government. Setting people right by influencing them to meet rightly civic responsibility, will keep Massachusetts in the lead among the states of the Union.

Mayor Peters, introduced as the representative of the Hub, spoke of the great influence of the Society through many years and of the inindividual physicians who have always contributed to the efficiency of the various health agencies of the city, and in private practice had done so much for the poor, without reward. He brought out the diversity of work in the six departments which function in promoting and protecting the health of the city and compared the efficiency of preventive medicine to forms of insurance. The scarcity of trained sanitarians was deplored, and the question raised as to whether this resulted from inadequate training in the medical schools or the low financial inducements. He paid an eloquent tribute to Professor Sedgwick, who had served the city as chairman of pauper institutions. Emphasis was placed on the need for medical service in conducting a war which, unlike the World War, must go on.

Dean Roscoe Pound was presented as a representative of the legal profession, who humorously alluded to the suspicion that professional men were members of trusts. His wit and logic gave force to the narration of many of his experiences. The attitude of the lay mind toward the professions, tending to suspicion, seemed to him to be founded on the consciousness of lacking something possessed by lawyers, physicians and the clergy, so that it was natural that an uninformed person might be indifferent to the benefits of law or even attempt to cure himself by self-prescribing. When the populace ceases to make use of gibes at the professions, the millenium will have arrived, and no one will need doctor or lawyer, and the problems of man's spiritual needs will have been solved.

The Society was honored by the presence of Dr. Hubert Work, President of the American Medical Association, who is now assistant Postmaster-General. In answer to the question of President Worcester as to why physicians have to pay postage when congressmen have franking privileges, Dr. Work affirmed that a man on trial was not obliged to give testimony which might be prejudicial to his case. He felt that Massachusetts was in good hands, but concluded that Boston is not a city but rather a state of mind. Referring to remarks of previous speakers, he said that there was no fear of a trust, for lawyers never trusted medicine, but medicine trusts everybody.

Responding for the clergy, the Rev. George A. Gordon, D.D., based his remarks on quotations from the classics in the time of Hippocrates, and contrasted the lack of reverence for the doctors in this more modern country to that shown in his native land of Scotland, where the people regarded the physician as not only a friend, but as a man of dignity and influence. He brought out the antiquity of simple but effective means of promoting and conserving health in the use of fresh air and water. Quoting the phrase that life is short and science is long, he developed the thought that each one has the privilege of building his brief life into the light of science, and that we live in critical times, requiring clear vision. We must realize that experience is slippery and judgment is difficult, but that the judgment which enables a person to hit the nail on the head is a stroke of genius. Referring again to his native land, the respect shown to doctors was earned by gentlemen of science, and that, above all, the people loved the schoolmaster, the minister and the doctor.

The President next introduced one of the modern heroes of medicine, a man who had given up many of the comforts of life, had isolated himself, together with a group of unfortunates who are shunned by society and kept in quarantine, Dr. Parker, physician for many years to the lepers on Penikese Island.

The members rose and bowed in tribute to this modest, high-minded and devoted man, a type of the true physician. To many, this was the most impressive feature of the meeting.

Dr. Henry P. Wolcott, long a leader in the profession, the man who made the Massachusetts Board of Health a model for and inspiration to the other states in the Union, responded briefly, thanking the profession for its confidence and support for many years.

The President then introduced his successor, Dr. John W. Bartol, of Boston, who briefly thanked the Society for the honor conferred, and pledged his earnest effort in behalf of the Society, asking especially for support in meeting the problems involved.

Dr. Bartol was born in Lancaster, January 10, 1864. His father, the Rev. Dr. Bartol, served the first parish of Lancaster through one of the longest pastorates in Massachusetts. His mother was Elizabeth Washburn. He was educated in the public schools, fitted for college at Exeter Academy, and graduated from Harvard College in 1887. He graduated from the Harvard Medical School in 1891, and was house officer in the Massachusetts General Hospital on the surgical service, but has devoted himself to general medicine. He was formerly visiting physician to the Boston City Hospital and a member of the State Board of Health from 1902 to 1907. He entered the service in June, 1917, and was honorably discharged in June, 1919, with rank of Major. To his associates, nothing need be said. The Society will have the service of a mature mind and a judicial temperament.

THE RELATION OF THE ORTHOPEDIC SURGEON TO THE GENERAL PRACTITIONER.

However ample the attainments of the general practitioner, or prompt his sagacity in recognizing diseases and their curative conditions, all must be aware that there are times when the outside help and advice generously at hand and unselfishly given, is of the greatest importance and assistance, not only to the practitioner, but to the patient.

It is in this latter rôle that the orthopedic surgeon stands in relation to general medicine, not leaning either towards the side of acquiring the patient permanently, or towards the side of offering inadequate service or advice, but in the spirit of coöperation for the good of the patient. There are many ways in which the orthopedic surgeon and the man in general practice may be of great mutual help, and if proper advantage is taken of the opportunities offered to each alike, much benefit will accrue therefrom.

To cite instances where such assistance might be properly called for, one would only need to recall the difficulties and confusion occasionally arising in the early diagnosis of osteomyelitis for one; another, early bone and joint tuberculosis; and in general, the treatment of fractures when in such cases many helpful hints in mechanical technique may prove useful.

The recognition and interpretation of conditions of the back, arising either from congenital, acquired, or traumatic causes, is a large field also where the orthopedic surgeon could bring his advice and special knowledge to the aid of the family physician in establishing a diagnosis and outlining the proper treatment.

No one specialty has done more to advance the knowledge and adequate treatment of anterio-poliomyelitis than orthopedic surgery, and the general practitioner would gain useful and helpful knowledge for himself and his patient by consulting such sources.

Congenital deformities, such as club feet and dislocation of the hips, often suffer from neglect until a proper result is impossible of attainment by recognized methods, leaving the patient permanently disabled. Early recognition and treatment result, generally, in early cures, and the knowledge of these methods of treatment can only be gained by consultation with those trained by daily contact with such problems.

Further enumeration is unnecessary, but many other bone and mechanical problems suggest themselves.

The orthopedic surgeon sees many border line cases where the advice and assistance of the general practitioner is necessary in making a diagnosis and outlining a course of treatment which is appropriate for that individual case and without which, such help could not be properly carried out. The factors of home life and environment are generally unknown to the orthopedic surgeon, and can only be supplied by consultation with the family physician.

Just as the orthopedic surgeon turns to the laboratory man for his vaccines and bacteriological and pathological assistance; to the nerve specialist for help in obscure cases, and to the gynecologist and genito-urinary surgeon for aid in the interpretation of obscure backaches; so the orthopedic surgeon should be ready to do his part in trying to solve some of the problems for the general practitioner.

What is the point of view of the general practitioner? Given a case of back strain, which does not get well with the usual strapping; a club foot; a wry neck; a scoliosis; a bad fracture; what is he to do? Should he continue to treat these cases rather than send them to some one who can treat them more adequately? If the condition is one which needs laboratory assistance and diagnosis, there is no hesitation, but the fear of losing the patient is the deterrent factor otherwise. This should not be so, and no patient need be lost except for the time being, and for the length of time necessary for adequate diagnosis and treatment. Family physicians are too strongly seated in the homes of their patients, to be forced to take a part in the general dethronement which is now going on, or to have any fear of losing anything by supplying adequate service.

There should be more general coöperation and consultation between the general practitioner and the orthopedic surgeon, not only for the rendering of adequate and early service to the mechanically afflicted, but for the mutual instruction and friendship gained thereby on the part of the medical consultants.

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SUMMARY OF PROF. CHAGAS' WORK.

ON May 26 and 27, Professor Carlos Chagas, Director of Oswaldo Cruz Institute, Rio de Janeiro, Brazil, gave three lectures at the Harvard Medical School upon the new disease, American Trypanosomiasis, first described by him.

The infectious agent is the Trypanosoma Cruzi. Chagas believes that the natural host of this trypanosome is an armadillo, tatusia novemcincta, which is abundant in the interior regions of Brazil. The holes in which this animal lives are infested by a species of triatome (triatoma geniculata), which may emigrate to human habitations, and in the intestines of which Chagas found the Trypanosoma Cruzi.

The most frequent intermediate host, however, is the "barbeiro," or triatoma megista, an insect somewhat like a bedbug. A large majority of the crude dwellings of the poor in the interior of Brazil are infested by the "barbeira." The insect is difficult to eradicate, is fairly long-lived, and is infectious throughout the three stages of larva, nymph, and adult insect

When the "barbeiro" sucks blood from an infected individual, it takes into its intestinal tract the trypanosome. If the trypanosome is in the flagellate form, it loses its flagellae and undergoes multiple divisions to form crithidia. These latter are found in the salivary glands of the insect. In other cases, if the blood of the infected individual contains the trypanosome in its "male" and "female" forms, these appear to unite in the gut of the "barbeiro," to result in the form which is also finally found in the salivary glands of the insect. Thus the "barbeiro" transmits the infection from one individual to another.

In the infested regions, it happens that infection occurs most frequently in babies and young children. The clinical picture is that of an acute infection. There is fever, lasting between ten and thirty days. The liver and spleen enlarge, the lymph glands swell, and the face presents a peculiar, almost pathognomonic myxedematous infiltration. During this phase, trypanosomes are found in the blood. They invade, practically, all the glands of the body, but show predilection for the nervous system and for striated muscle. Invasion of the meninges and of all parts of the central nervous system is the chief cause of death in acute cases; in chronic cases, it may result in all grades of mental deficiency. After the acute febrile period is over, the trypanosomes disappear from the blood, and invade the tissues. The heart muscle is very frequently affected, and the degeneration in the myocardium set up by this invasion, results in arrhythmia and heart block. Cardiac involvement is the most frequent cause of death in the chronic cases. Stokes-Adams syndrome is met with in young children, and sudden death may occur in apparently healthy young adults from this cause.

In addition to the above effects of trypanosomiasis, Chagas speaks of infantilism and myxedema as being due to the invasion of the thyroid by the trypanosome.

G. G. SMITH.

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REPORT OF COMMUNICABLE DISEASES

There is considerable variation in the practice of reporting diseases dangerous to the public health by physicians. Some members of the profession are businesslike, prompt and efficient in meeting the requirements of the Department of Public Health, some are inclined to wait for very evident indications of disease, and a few are careless and indifferent. Those who are careful in making a diagnosis are, as a rule, most loyal to the regulations in force. The careless ones are of two classes, practitioners who are busy and, perhaps, overworked, and those who have never developed high ideals of practice or personal conduct.

The situation in New York has led to especial reports in the Bulletin of the Department of Health, and pleas for better service. A number of physicians have shown marked disregard of the requirements, and have been sued. Heavy fines have been imposed and the court action and publicity have caused great inconvenience and humiliation.

In Massachusetts, the State Department and local boards have been most lenient, and every effort has been made to secure coöperation rather than to resort to compulsion or prosecution. In a recent case, it was found that a physician had completely ignored the existence of diphtheria. The first patient of a series died, after presenting the typical signs of suffocation. The diagnosis was pneumonia, but cultures taken from the dead child showed the presence of diphtheria bacilli, and other children in the family developed the disease. The State Department tried to induce the attending physician to revise the death return, but this he refused to do. Instead of entering a suit, the Board of Registration in Medicine was asked to act. After a hearing, the Board suspended the license of the physician in question. One feature of the defense in the case was the concerted effort of other physicians to make it appear that the death might have been due to pneumonia and that the attending doctor may have met all the symptoms by his diagnosis and treatment. It is hoped that the State Department of Public Health will not find reason for other complaints.

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MEDICAL NOTES.

NEW HAMPSHIRE MEDICAL SOCIETY. — The one hundred and thirtieth annual meeting of the New Hampshire Medical Society was held in Concord, May 25 and 26. Dr. F. B. Lund, a native of New Hampshire, attended the meetings and read a paper entitled, "Ulcers of the Stomach." Dr. W. B. Cannon read a paper in which new evidence regarding the control of the thyroid gland was presented. Dr. Richard S. Eustis read a paper on the "Problem of Heart Disease of Rheumatic Type." The meetings were very well attended and many papers of great merit read. Dr. Charles S. Walker was elected President for the ensuing year.

DR. RAWLINGS, director of the Illinois State Department of Health claims that in his state alone, there will probably be more deaths of infants in three years than this country lost soldiers from all causes during the World War. Other states are contributing an equal proportion to this frightful mortality. Hasten the day when Massachusetts will have infant welfare work efficiently carried on in every community.

Uncle Sam's Model Village.—Every town should send to the United States Public Health Service for details of methods used in developing a model village on a 516-acre tract at Perryville, Md. The birth rate exceeds the average throughout the state, the death rate is low, communicable disease carefully managed, and all matters pertaining to health carefully regulated. This demonstration should be used as an incentive to provide ideal conditions everywhere.

A Study of Maternal Mortality in New York City by William Travis Howard, Jr., of Johns Hopkins University, shows that in the city of New York, over a five-year period, the death rate from puerperal septicaemia is 14.41 per 10,000 labors, whereas in Boston the rate is 24.03. In 1919, the rate in New York was brought down to 11.41. The death rate among mothers who had received prenatal care was .24 as compared with .45 for the city at large. There was also a reduction in the rate of infant deaths of fifty per cent. among those born of mothers under such care. New York thereby challenges Boston.

Dr. Frederick L. Hoffman, third vice-president and statistician of the Prudential Insurance Company, has accepted an invitation to join the Mulford Biological exploration of the Amazon Basin, under the direction of Dr. H. H. Rusby, which will leave for the west coast of South America on the S. S. *Santa Eliza,* on June 1st. The general purpose of the expedition is to seek new information concerning useful drugs and ingredients of value to medical and pharmaceutical science. Dr. Hoffman's work will concern the health, longevity, acclimatization and sanitary progress of the regions visited, particularly as regards American residents, temporarily or permanently settled under the conditions of tropical life. His investigations will amplify the research work of the Harvard School of Tropical Medicine and of the American Geographical Society, etc. Attention will be given to the effect of high altitude on health and longevity, and in the Amazonian lowlands to the prevailing tropical diseases, especially the various types of malarial fever. The expedition will probably take two years, or more, but Dr. Hoffman's work will practically terminate at Manaos, Brazil, and actually come to an end at Para, from whence he expects to return to this country some time in the fall. The results from a life insurance point of view should be of value in perfecting the tropical rating practices of companies which accept risks on American residents in tropical regions. With the growth of American commerce throughout South and Central America, the question of an equitable rating practice is becoming one of serious concern. Dr. Hoffman will have the coöperation of the Pan-American Union and of the diplomatic and consular offices throughout the section to be visited. He recently prepared an exhaustive discussion of the sanitary progress of the Pan-American Republics, which will be published by the Pan-American Union in the near future.

Certified Water on Steamships.—Another step toward insuring travellers on interstate carriers against the evils of polluted drinking water was taken on April 15, when the laws already in force in regard to railway trains were extended, with necessary modifications, to steamships on lakes and rivers, and between United States ports and ports of adjacent countries. Henceforward, water used on such vessels for drinking or cooking, must be obtained on shore from a source approved by the U. S. Public Health Service, usually acting in coöperation with State health authorities, or must have been treated by a method approved by the Service. If not obtained ashore, the water must be treated on board ship by an approved method. All water-piping systems on shipboard are required to be so arranged that no connection can be made between the drinking water pipes and pipes for any other water system. Every tap or other source yielding water unsatisfactory in safety or quality is required to be marked by properly placed signs, approved by the Public Health Service, stating that the water is unfit to drink. By these regulations, it is hoped to prevent outbreaks of typhoid fever and dysentery.

The common belief that botulinus poisoning is associated only with the use of olives must be combatted, for a fatal case developed recently in Seattle, after ingestion of string beans. The canning was according to approved methods. Physicians should warn people of the danger of using canned vegetables which show the slightest indication of decomposition. A very small amount of food infected with the bacillus botulinus may be fatal.

Brooklyn Cardiological Society. — The fourth meeting of the Brooklyn Cardiological Society was held at the office and residence of the president, Dr. William J. Cruikshank, 102 Fort Green Place, Brooklyn, N. Y., U. S. A., on Monday evening, May 23rd, at 8.30 o'clock. Program: Address, "Cardiac Murmurs and Their Relation to Organic Heart Disease," by Dr. Lewis A. Conner, Manhattan. Discussion opened by Dr. Glentworth R. Butler.

Note—Dr. Richard S. Cabot is an honorary member of this Society.

New Tuberculosis Hospitals.—An outline of the construction plans for the tuberculosis hospitals, so much needed for the treatment of ex-service men, will soon be published by the U. S. Public Health Service. In the preparation of these plans, valuable assistance has been rendered by T. B. Kidner, of the National Tuberculosis headquarters. Copies of the publication may be had by application to the Surgeon General of the Public Health Service.

Prescribing for a Sick Stream.—An intensive study of stream pollution with special regard to the establishment of a general plan by which any polluted stream in the United States might be purified at a minimum expense, has recently been begun by the United States Public Health Service.

As is well known, a polluted stream tends to purify itself, but its pollution in this direction depends on the amount and character of the original pollution, on the volume and speed of the current, and on the extent to which new pollution is added along its course.

The Service has selected for study the Chicago Main Drainage Channel and the Illinois river (which empties into the Mississippi), chiefly because all the primary pollution of this stream originates in Chicago and is accurately ascertainable, both as to amount and character. Analyses taken along the course of the canal and river will determine the degree and nature of the changes that take place in it. Where new pollution is added, its amount and character must be ascertained; and its effect on the old pollution learned. This last is important, for it is quite possible that sundry industrial waste might neutralize each other, or might destroy certain types of organic pollution.

The work in Illinois is in immediate charge of J. K. Hoskins, Associate Sanitary Engineer of the U. S. Public Health Service, and is under the general supervision of Surgeon W. H. Frost.

New England Society of Psychiatry Meets at Northampton.—The semi-annual meeting of the New England Society of Psychiatry was held at the Northampton State Hospital, Wednesday, May the fourth. The members were guests of Dr. John A. Houston, Superintendent of the Hospital. Dinner was served, following which the meeting was held, Dr. Walter E. Fernald, President, presiding.

Dr. Arthur H. Ring of Arlington Heights, read a paper on "Suicide." Dr. Warren Stearns of Boston, on "Suicide in Massachusetts," and Dr. Walter B. Cannon, Professor of Physiology, Harvard Medical School, on "The Present Limitations of Our Knowledge of the Endocrine System."

Sixty members and guests attended.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston. — During the week ending May 28, 1921, the number of deaths reported was 213 against 217 last year, with a rate of 14.60 against 13.99 last year. There were 30 deaths under one year of age, against 47 last year.

The number of cases of principal reportable diseases were: Diphtheria, 76; scarlet fever, 32; measles, 87; whooping cough, 15; typhoid fever, 1; tuberculosis, 70.

Included in the above were the following cases of non-residents: Diphtheria, 8; scarlet fever, 8; tuberculosis, 20.

Total deaths from these diseases were: Diphtheria, 3; scarlet fever, 2; whooping cough, 1; typhoid fever, 1; tuberculosis, 13.

Included in the above were the following cases of non-residents: Diphtheria, 2; scarlet fever, 1; whooping cough, 1; typhoid fever, 1; tuberculosis, 1.

Dr. W. G. Rowe, of England, the noted neuro-psychiatrist, who attended the medical conventions in Boston, will visit Washington on June 9, to confer with the Surgeon General of the Public Health Service and with the Director of the War Risk Bureau, in regard to mentally disabled American soldiers. Later, he will go to Perryville, Md., where the Service keeps its great medical stores, to attend a clinic at the large Public Health Service Hospital there and to familiarize himself with the types of cases under treatment. On June 11 he visited Atlanta, Ga., to attend the meeting of the American Psychopathological Association. While in Boston, Dr. Rowe read a paper on the biological significance of mental disease, at the meeting of the American Medico-Physiological Association.

TYPHOID FEVER IN WALTHAM.—The recent epidemic of typhoid fever in Waltham reported to have been the result of using milk from one dairy, should be employed as an argument for the greatest care in the use of this most important article of food. The great difficulty in dealing with a milk-borne disease is that before the source is determined, many may be infected. Although typhoid is being largely controlled, these deaths show that great care must be exercised by individuals, for health authorities can often only act after evidence of the disease is apparent.

DR. NORMAL M. HUNTER of Hudson, has been appointed medical examiner of the Ninth Middlesex District. The towns comprising this district are Hudson, Maynard, Stow, and Sudbury. Herbert A. Rockwell, of Amherst, has been appointed medical examiner of the Third Hampshire District.

EXEMPTION CERTIFICATES FOR ADMISSION TO SCHOOLS WITHOUT VACCINATION. — The School Board of Haverhill has shown commendable courage and devotion to duty in requiring repeated certificates stating that the condition of pupils warrants omission of vaccination. The Supreme Court has handed down a decision setting forth that such requirement is legal and thereby sustained this contention of the Board. School and health authorities have been fearful that such requirements could not be maintained. The way is now clear for better protection against smallpox. The antivaccinationists will undoubtedly try to have the compulsory features of the law done away with. The profession must be alert and the people warned in advance.

DR. EUGENE R. KELLEY has been elected President of the State and Provincial Health Authorities of North America. Dr. Kelley has shown unusual ability in organization and constructive work in our State Department of Public Health. His diplomacy has been in evidence during trying periods of his administration, and his courage and patience in dealing with complicated situations has reflected loyal devotion to the best interests of Massachusetts.

MASSACHUSETTS IS HONORED by the election of Dr. Hugh Cabot to the Deanship of the University of Michigan Medical School. This elevation of our esteemed fellow is a fitting evidence of appreciation of his natural ability and acquirements, attained by unremitting study and hard work.

Dr. Cabot brings to this position a mind developed through extensive practice in surgery and the study of the principles and rules of teaching. His address before the Chicago Convention, earlier in the year, demonstrated a grasp of the problems involved in medical education. His administrative capacity was shown during the late war as O. C. of General Hospital 22, British Expeditionary Forces, with the rank of Lieutenant-Colonel. He was made a companion of the Order of St. Michael and St George.

The University of Michigan Medical School has gained prestige by this selection of its Dean.

WEEK'S DEATH RATE IN BOSTON.—During the week ending June 4, 1921, the number of deaths reported was 157 against 183 last year, with a rate of 10.81 against 11.81 last year. There were 21 deaths under one year of age agoinst 28 last year.

The number of cases of principal reportable diseases were: Diphtheria, 57; scarlet fever, 45; measles, 117; whooping cough, 19; typhoid fever, 2; tuberculosis, 47.

Included in the above were the folowing cases of non-residents: Diphtheria, 8; scarlet fever, 3; measles, 2; tuberculosis, 8.

Total deaths from these diseases were: Whooping cough, 1; tuberculosis, 10.

Included in the above, were the following non-residents: Tuberculosis, 2.

Obituary.

WILLIAM ALLEN BROOKS, M.D.

Dr. William Allen Brooks, Boston surgeon, died at the Brooks Hospital, which he had founded, on Corey Hill, Brookline, May 20, 1921, of heart disease, at the age of fifty-six.

Dr. Brooks was the son of William Allen Brooks of Haverhill, where he was born August 15, 1864. After graduating from Harvard College in 1887, he took his M.D., with an A.M., at Harvard Medical School in 1891, served as house officer at the Massachusetts General Hospital, and settled in practice in Boston. While in college, he was prominent in football and rowing. Early showing an interest in anatomy, he became assistant in anatomy at Harvard Medical School, holding the position from 1893 to 1895, when he was advanced to demonstrator, a position he filled until 1901. Two years later, he was made assistant visiting surgeon, and later, surgeon to the Massachusetts General Hospital, while serving as surgeon to St. Elizabeth's Hospital, then at 61 West Brookline street, South End. Dr. Brooks was medical examiner for the Boston Elevated Railway. During the World War, he was chief surgeon to the State Guard, with the rank of lieutenant-colonel, showing great skill and executive ability in organizing an emergency hospital in the Commonwealth Armory in Allston, that could care for a very large number of injured at short notice. He perfected a motor dressing station for use in riots and military emergencies, that he demonstrated to his fellow members of the Massachusetts State Committee, Council of National Defense, Medical Section.

In 1915 he built and incorporated the Brooks Hospital of 34 beds, at 227 Summit Avenue, Brookline. Here there are two wards devoted to the treatment of industrial accidents. Dr. Brooks was in charge, and of late years, after the death of his wife, in 1919, lived in the hospital, previously having had a residence in Lincoln, and a winter home and office at 167 Beacon street, Boston.

Dr. Brooks is to be credited with having organized and dispatched the first medical relief expedition to Halifax, Nova Scotia, after the disaster there in 1917, and with the establishment of the Corey Hill Cubicle Hospital for the outdoor treatment of influenza patients in the epidemic of 1918.

He married Miss Helen M. Winchell of New Haven, Conn., in 1892. Their only child died in infancy. A brother, George Brooks, of Haverhill, survives him.

CHARLES FLORENCE McCARTHY, M.D.

Dr. Charles Florence McCarthy, a fellow of the Massachusetts Medical Society, died at his home in Winchester, May 19, 1921, aged 51 years.

He was a native of Stafford Springs, Conn., where he was born August 24, 1869. His education was received at Monson Academy and Middlebury College, Vermont; his medical degree was from the Long Island College Hospital, Brooklyn, N. Y., in 1890.

Dr. McCarthy was a member of the Board of Overseers of the Poor in Winchester for 18 years and assistant medical examiner for the fifth Middlesex district. He is survived by a widow (Mrs. Nora Healy McCarthy) and by a son and daughter.

EDWARD ELIAS MATHER, M.D.

Dr Edward Elias Mather died at his home in Williamstown, May 22, 1921, at the age of 77. A descendant of Rev. Richard Mather, he was born in Williamstown in 1844, prepared for college in the Rev. Nathaniel Griffin's School, and graduated from Williams College in 1868, taking an A.M. there in 1871, the same year that Columbia University, New York, gave him an M.D.

Dr. Mather joined the Massachusetts Medical Society in 1876 and practiced medicine in his native town for forty years. His name was placed on the retired list in 1910 With the assistance of Dr. Henry L. Sabin and Dr. A. M. Smith, Dr. Mather organized the first board of health in Williamstown, always taking a strong interest in the affairs of the town. He was never married.

RECENT DEATH.

Dr. Aurelius Sherwin, graduate of the University of Vermont, 1872, and member of the Vermont Medical Society, died at his home in Boston, on April 8, 1921, of broncho-pneumonia, at the age of 83. He was a practitioner in Boston for 40 years.

Society Meetings.

THE BOSTON SURGICAL SOCIETY AND THE BIGELOW MEDAL.

One of the most notable events occurring during the sessions of the American Medical Association was the meeting arranged for by the Boston Surgical Society for the purpose of presenting the Bigelow Medal to Dr. William J. Mayo. On the platform with Dr. R. W. Lovett, President of the Society, and Dr. Mayo, were Major General Sir Robert Jones, K.B.E., C.B., of Liverpool; Jacques Calvé, of Paris; Prof. V. Putti, of Bologna; W. W. Keen, George H. Monks, first president of the Society; William Sturgis Bigelow, Hugh Cumming, U. S. Public Health Service; Surgeon General Ireland; Harvey Cushing and Walter C. Howe, Secretary of the Society. In the audience were many eminent members of the profession and prominent scientific and social leaders.

The opening paper was read by Dr. Lovett, and is as follows:

ADDRESS AT MAYO MEETING ON JUNE 6, BY ROBERT LOVETT, M.D., PRESIDENT OF THE BOSTON SURGICAL SOCIETY.

The medical profession in its continual warfare against disease may not unfittingly be compared to a small, and not particularly well organized army, entrenched in a fortified camp in a country, which in part at least, is none too friendly.

This camp is subject to constant small raids and continued guerilla warfare, but at times attacks in force are made upon it by those who wish to do injury by limiting the territory which is held, by damaging the equipment and usefulness of the army, and by attempting to discredit it by making false statements charging cruelty and inhumanity. But year by year, in spite of this, perhaps partly because of this, the fortications become a little stronger, the camp extends a little, the equipment of defense is freshened up by use, and the yearly attacks are on the whole repelled, more often with some gain—a gain which mounts steadily.

This extension of the territory, this strengthening of the ramparts is due, in part, to the privates of the army, and in part to its leaders. The privates are unselfish, hard working, devoted men, given to charitable enterprises, not particularly well remunerated, and laboring unceasingly in this warfare.

The leaders of the army do not become leaders in the same way as in the army that fights with powder and shot,—they are neither appointed by a superior authority nor elected by their comrades. They nominate, qualify, and appoint themselves. Rising thus to leadership by their own attainment, and by that alone, it follows that no influence, no money, no power, no notoriety can make a man a leader in medicine, and no combination, no authority, and no clique can prevent him from becoming a leader, provided he has within himself the necessary requirements.

The leader in medicine is essentially a self-made man, standing on his own feet, strong in his own convictions, relying on his own achievement. He must win and hold his place by honesty, strength, skill and ability. But he must possess something more than mere professional skill and ability—call it what you will, character, spirituality, or vision, there must be something in the man that commands personal respect and confidence, or he cannot qualify.

These are the essentials required of the leader in medicine; he may be young or old. He may originate in a large city or in a small town, he may come from the East or the West, but once having attained real leadership he belongs to no town, state or nation, he becomes a national and international asset and his recognition comes correspondingly from all parts of the world.

The great leader, whose name has been given to the medal, which is to be presented tonight, found his origin in a large eastern city, a city with honorable medical traditions, a medical center, possessing an old and leading medical school, and during his active life he was surgeon to a hospital, famous then as now, as a center of sound medicine and surgery.

In contrast to this, the guest, in whose honor we are meeting tonight, had his origin in a small western town, at that time without a medical school or a world famous hospital. He did not go to a medical center to start his life work,—he made the medical center come to him. In Rochester, a small Minnesota city, he and his distinguished brother have built up a clinic and a medical school which is a Mecca for the surgeons of this country and Europe. They have brought within reach of the poor as well as of the rich, the highest possible grade of medical and surgical service, and they have endowed the institution so that it may outlast their time. This achievement has been built up from nothing, by vision, by professional skill of the highest degree, by the spirit of service, and by wise and broad-minded administration.

Some seventy years ago, a retired clergyman, a contemporary of Dr. Bigelow, by name Ralph Waldo Emerson, living in a small town not twenty miles from where we sit tonight, with characteristic clear-sightedness, and prophetic vision, wrote words which will introduce our guest far better than any words of mine can do. He wrote—that if a man could find a better method of helping human needs than those which existed, men would wear a footpath to his door though he lived in a pine forest.

The path to the Mayo Clinic in Rochester is worn wide and deep. I present to you—Dr. William J. Mayo.

Dr. Mayo's paper was under the title: "In the Time of Henry Jacob Bigelow."

After reference to Dr. Bigelow's lineage, tributes to this great surgeon were paid and comparisons made with the individual characteristics of eminent men of his time; Dr. Bigelow's influence on medical education, the development of the Massachusetts General Hospital, various charitable organizations, and the development of orthopedic surgery were set forth.

His studies abroad brought him under the influence of leaders in the French and English schools, the distinctive qualities of both having a great influence in developing a marked natural ability of mind and body which made him not only a great surgeon but also a student who could grasp the real import of problems coming to his attention.

References were made to analytical estimates of his work by David W. Cheever and some of his pupils. Incidentally, Dr. Mayo strongly urged the proper regulation of animal experimentation and charged the profession with failure to supervise and regulate this essential department of medical teaching and investigation, and showed that much opposition to vivisection, so-called, was due to irregular and unnecessary work done by persons who were not qualified to engage in it.

All in all, it was an impressive address, and was enthusiastically applauded. The address will appear in full in the *Journal of the A. M. A.*

INTRODUCTION OF DR. GEORGE H. MONKS, FOLLOWING DR. MAYO'S ADDRESS.

The Boston Surgical Society has been entrusted by a donor, who desires to remain anonymous, with a sum of money, the income of which is to be devoted to the presentation of a gold medal at such intervals, and to such persons as seems to the society best. It is specified that the medal "is to be awarded for conspicuous contributions to the advancement of surgery."

Up to this time, largely on account of war conditions, no medal has been given. The Society has unanimously decided to make the first award of the Henry J. Bigelow Medal to Dr. William J. Mayo of Rochester. Dr. George H. Monks, the first president of the Society, and a former assistant of Dr. Bigelow, will now present the medal.

DR. MONKS.

DR. WILLIAM J. MAYO: earnest student and untiring practitioner of surgery, who has contributed largely to its advancement; keen observer, who has been quick to appreciate the true value of new ideas and new methods, wherever they may have originated; honest and fearless critic; prolific writer; teacher of surgeons from all parts of the world; princely contributor to the cause of medical education and research; one who has made mankind his debtor; in the name of the Boston Surgical Society, and by its direction, I have the honor and pleasure of presenting to you the Henry Jacob Bigelow medal.

Dr. Mayo bowed in acknowledgment of the honor conferred.

Dr. Lovett then announced that the meeting was adjourned.

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THE A. M. A. OPENING MEETING.

THE general exercises of the A. M. A. meeting was opened in the Opera House, Tuesday evening, June 7, at 8.30. After announcements by the Committee of Arrangements, Governor Cox extended the welcome of the State to the Association and spoke at length on the importance of medicine in dealing with the vital problems of humanity.

Mayor Peters cordially welcomed the visitors to the city of Boston and spoke of the important contributions of physicians to the welfare of this municipality. He spoke specially of the work now under way for the purpose of preventing the threatened invasions of bubonic plague and urged the delegates to visit the city institutions.

President Hubert Work then delivered his address. Beginning by reference to the founding of the nation by the Pilgrims, characterizing the rock as the "cradle of the nation's soul," and with the spirit of home-coming children, said, "We return not in sorrow or with apology, but we come with pride to the home of Dr. Turner, the first licensed American physician, bringing with us men whose fame is international, whose teachings have been translated into many tongues, whose names will endure with the language of medicine."

He then characterized the American Medical Association, representing 80,000 trained medical men, as the Plymouth Rock of American medicine, and proclaimed that the governing purpose of the Association is to collect and disseminate truths in medicine, perfect science, expose pretence, elevate medical men, and to bind medicine to the government, its armies and its municipalities, with the hope that the Church will join with it for the greatest good for the greatest number. He outlined the duties of the physician, now that the war is over, and said that no armistice was signed with disease, and that medicine must include the larger field of civic service. "No one believes that the physician should husband his special knowledge and sell it to individuals only; medicine is recognized as public service and we must contribute our quota to public welfare, because we are citizens set apart as servants of health." He brought out the distinction between physicians and pretenders. "The attitude of the quack is not to prevent disease but to invent it," and that the interests of physicians in medical licensure is to prevent the appropriation of the title, Doctor of Medicine, for the purpose of deception.

In his admonition to young men, he said that he must not enter the domain of medicine with the commercial instinct, and when we consider that we are as one in eight hundred of the people, we must not regard ourselves as dictators but under the conception of the broadest opportunities we must study the problems involved in every human interest.

In referring to medical education, he said that the first and last hope of scientific medicine lies in the medical colleges and local medical societies, and there should be opportunities for post-graduate studies for the practitioner in rural communities. To provide for small localities there should be health centres and, when necessary, the state should supply hospital laboratories and other aids.

Proceeding to discuss the standardization of medical colleges and hospitals, he said that the grading of medical colleges was a sinecure compared to the grading of hospitals, and elaborated the problems involved.

The benefits and dangers of group practice were discussed, and he said that "the future of group practice will be determined by its attitude to other groups and independent practitioners. If its governing purpose is altruistic it will endure, if its first purpose is commercial it will deservedly fail."

Reference was made to a local cult which treats all illness as imaginary in the following words:

"It soothes the sick by denials, while nature effects a cure or the sufferer passes out, much as a mother assures her frightened child at night that its terrors are dreams and without substance, until realities readjust its disordered fancies.

"Although this theory of 'three Graces' is not applied to food or clothing or housing, admits birth but denies death, denies disease and ignores its causes, it has been a lasting comfort to those who are well and finds prepared soil in distress, for 'in the shadow of a great affliction, the soul is dumb.'

"The Christian religion has been taught 2,000 years without recognizing in practice the basic principle of its founder, read in the challenge, 'Show me your faith without your works, and I will show you my faith by my works.' The human touch of a spiritual man was the professional equipment of a physician the world has worshiped for twenty centuries. Yet His spiritual teachings have been passed to ministers of His gospel, and His miracles of healing have been emulated by doctors of medicine."

The impossibility, under present conditions, of efficiently dealing with the criminal, the prostitute and the insane was emphasized, but of all agencies medicine could do most in constructive effort. His closing statement follows:

"American medicine has its greatest achievements before it. It must go to the crossroads and villages for its vision of service, call in its troopers, and train from the outskirts, toward common centers.

"It must prevent disease where possible, relieve it where it occurs, aid in the upkeep of earning power, and contribute its influence to maintaining the integrity of a nation's physical and moral fabric.

"I would plead for that spirit of service which governed practitioners of the last century, who, knowing less of medicine, depended more on personal attention than we now do; for the spirit of William McClure, of fiction, confined for a life time to the highland limits of a day's ride; of our own General Gorgas, who converted a slough of death into a resort for health, and turned the traffic of a world; for that which prompted the self-sacrifice of Walter Reed, who invited death that others might safely pass; the spirit of thousands of men who have preceded us, whose names were unknown or have long been forgotten, but of each of whom the recording angel wrote, 'He went about doing good.'

"Neither hope of professional advantage nor desire for personal aggrandisement, through the highest office my profession has to give, moves me. But if service to it may strengthen the bond of human sympathy between our people, and the altruism and science of medicine, I shall be content. For, 'Of all the work my hand hath wrought beneath the sky, save a place in kindly human thought, no gain have I.' "

Miscellany.

RÉSUMÉ OF COMMUNICABLE DISEASES. APRIL, 1921.

General Prevalence: 9,735 cases of communicable diseses were reported for April, as compared with 10,519 for March. However, there were reported less cases in both January and February. The excess for April over January and February is due almost entirely to the regular increase in measles that has been occurring each month since the beginning of the present epidemic of that disease last November.

There were decreases in the reported incidence of all the more important communicable diseases, except measles, which numbered 3,293 cases, compared with 2,836 for March.

Diphtheria, which in January was more prevalent than for any month of 1920, has steadily decreased each month since then. In January, there had been 965 cases. The total for April was 676.

German Measles exceeded 100 cases both in April and in March. This has not happened since July, 1918. There were 101 cases reported in April and 107 in March.

Gonorrhea and *Syphilis* were reported in about the usual numbers; 468 for the former and 216 for the latter. Roughly speaking, there are now being reported monthly, about 500 cases of gonorrhea and 250 of syphilis.

Measles, as has been said, reached the highest number yet reported during the present epidemic.

Lobar Pneumonia. There were 565 cases of lobar pneumonia reported. Our death returns on this disease show that probably not more than one-third or one-fourth of all cases were reported.

Scarlet Fever, which, with 1,258 cases in March, had been gradually increasing since last August, began to decrease again and but 1,016 cases were reported.

Whooping Cough still remains high, though there was a decrease from 894 for March to 707 cases for April.

Typhoid Fever. The number of reported cases of typhoid fever to May 1, 1921, has exceeded that reported for the first four months of last year by 16 cases. There were 44 in April.

RARE DISEASES.

Anthrax was reported, from Danvers, 1.

Anterior Poliomyelitis was reported, from Lawrence, 1; Sutton, 1; Worcester, 1; total, 3.

Dog-bite requiring anti-rabic treatment was reported, from Fall River, 5; Lowell, 3; New Bedford, 1; Winthrop, 2; total, 11.

Dysentery was reported, from Cambridge, 1.

Encephalitis lethargica was reported, from Boston, 4; Brookline, 1; Dudley, 1; Easthampton, 1; Fitchburg, 1; Lynn, 1; Mendon, 1; Norwood, 1; Wakefield, 1; Weymouth, 1; Worcester, 1; total, 14.

Epidemic cerebrospinal meningitis was reported, from Blackstone, 1; Boston, 5; East Bridgewater, 1; Fall River, 1; Haverhill, 1; Holliston, 1; Milford, 1; New Bedford, 2;

Salem, 1; Springfield, 1; Tewksbury, 1; West Bridgewater, 1; Worcester, 1; total, 18.

Leprosy was reported, from Boston, 1.

Malaria was reported, from Boston, 3; Fall River, 2; total, 5.

Pellagra was reported, from Brockton, 1; Danvers, 1; Waltham, 1; total, 3.

Septic sore throat was reported, from Boston, 4; Bridgewater, 1; Brockton, 1; Fitchburg, 1; Malden, 1; Mansfield, 1; Newburyport, 1; Worcester, 1; total, 11.

Smallpox was reported, from Boston 4; Malden, 3; total, 7.

Tetanus was reported, from Boston, 1; Dennis, 1; Clinton, 1; Lynn, 1; Salem, 1; total, 5.

Trachoma was reported, from Boston, 7; Braintree, 1; Brockton, 1; Lawrence, 1; Plymouth, 1; Somerville, 1; Watertown, 1; Worcester, 2; total, 15.

Trichinosis was reported, from Boston, 1; Winchester, 1; total, 2.

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HEALTH NUGGETS.

Germs, says the U. S. Public Health Service, are usually a hand to mouth affair. Better wash up.

Holes in the street are warnings against more holes. So are holes in the graveyard. Repairs in time will delay both.

Some people say that sanitation doesn't pay. Well, it doesn't pay doctors and grave-diggers, says the U. S. Public Health Service. Be sanitary; seek health before you need it.

Venereal diseases are diseases, not crimes, says the U. S. Public Health Service. Many people have been infected innocently or in very early youth. The incidence of the disease in boys of 17 is very high.

If treated promptly by reliable doctors or at public clinics, venereal diseases can be cured, say the U. S. Public Health Service. Patent medicines bought without competent advice, often do great harm. The same is true of the work of most doctors who advertise that they cure "men's" diseases

Many lives and much property are lost every year because of accidents due to venereal diseases, says the U. S. Public Health Service. So great, in fact, are these losses that the National Safety Council has issued a bulletin on them. For instance, four serious recent railway wrecks were traced to employees who failed because they were suffering from paresis, which is a form of syphilis.

In order to save workingmen from ill health resulting from insanitary working conditions and to save manufacturers from incurring claims from damages, it is necessary for the Public Health Service to examine physically both the workmen and the plant in which they work. Some manufacturers and many workmen fear examination, believing that it will be used to make trouble for them, and not realizing that undiscovered defects in either plant or man will surely lead to serious results. To such the Public Health Service says that it is strictly neutral and that it will not "tell tales." Its object is to improve the health of the men and to enable the factory to save money by making its employees healthy by giving them healthy working conditions.

Don't give the baby patent medicine. If you feel you must use advertised remedies, try them on yourself, or better still, on the dog. Let your family doctor attend to the baby.

The U. S. Public Health Service estimates that at least 500 and possibly 1000 lepers are at large in the United States, and that the number is increasing. The government did not start work on its Federal Home for Lepers a minute too soon.

It took Ehrlich 606 experiments to discover a way to give a man arsenic enough to kill syphilis germs in his blood without running the risk of killing him. He called the result 6—0—6, or "salvarsan." In this country the United States Government supervises its production through the Hygienic Laboratory of the Public Health Service and calls it arsphenamine.

The scratch of a lion's claw is almost as deadly as his bite, for he never cleans his nails, and he always carrys under them rotting meat that is rank with deadly germs. Flies and water bugs do the same thing on a smaller scale; and, "Don't forget," says the U. S. Public Health Service, "that they never wipe their feet."

The U. S. Public Health Service calls attention to the fact that only twenty-three states have efficient birth registration laws; eighteen have imperfect ones; and five have none at all. Inability to prove age may cause all sorts of legal troubles later in life—in proving citizenship, in voting, and in inheriting, for instance. Don't forget to make sure that the new arrival in your home has been registered.

And now we have the woman dental hygienist. She does not pull nor fill teeth, and consequently is not a terror to children. Instead, she limits her work to cleaning and polishing the teeth above the gums. The U. S. Public Health Service says that this is most helpful in making the gums healthy and in preventing decay. Twelve states have already legalized such practice by women.

"On March 5, the date of our last weekly report," says the Surgeon General of the U. S. Public Health Service, "about 2050 beds were vacant in our hospitals. Of these, about 1000 were in hospitals just opened or additions to older hospitals and were rapidly being filled. The remaining 1000 was less than 6% of our total capacity of 17,648, a very small allowance for new arrivals. This does not, of course, include our patients in rented beds in contract hospitals, who numbered 10,506.

Bedbugs are easily gotten rid of, says a recent publication of the U. S. Public Health Service, by exposing them to extremes of temperature. Cold as low as 17° F. above zero, or as high as 100° F. above, if continued for two or three days, will destroy them. The cold might be applied in the north, for instance in country houses whose owners leave them unoccupied during the winter, or in houses that can be evacuated for a few days. The Service offers no suggestion as to the heat end of the problem, but a roaring furnace for two or three August days might serve—if the owners could camp out for the interval.

MEDICAL AFFAIRS IN MEXICO.

EDITOR OF THE BOSTON MEDICAL AND SURGICAL JOURNAL,
Dear Doctor:—

Your request that I write an article for your JOURNAL "giving concise information about medical affairs in this country," is quite a large order; it includes hygiene, sanitation, epidemic and endemic diseases, quarantine laws and local and general laws governing, or not governing, the foregoing subjects, and the laws governing the practice of medicine in this city.

Owing to the ten years of revolution, this country is plentifully supplied with bubonic plague, typhus, yellow fever and smalpox. The last three are, practically, endemic in costal towns and cities, while smallpox is considered endemic in most of the cities in the republic, at present.

Each state is supposed to have a board of health which may regulate the practice of medicine in its environs, but I am informed that only a very few of them require an examination in Spanish as a requisite to practice medicine.

The federal district of which the City of Mexico is the capital, makes its own laws, and the Board of Health here, during the Carranza régime, passed a law conceding to any practitioner, who had lived three years in this country, the right to have his diploma validated, if the college from which he was graduated was recognized as exacting the same requisites as those of the National School of Medicine in this city.

Many of the foreign doctors here took advantage of this decree and obtained the right to practice medicine in this city under that decree.

The constitution of this republic, however, grants to all persons to engage in any occupation so long as it does not conflict with, or endanger, the lives or property of the people, hence, at present, any professional man can practice his art in this city with perfect freedom, although he obtains no legal standing and cannot collect his bills by law.

This condition, however, is likely to be readjusted by the next regular session of the national congress in this city, as a bill has been introduced, constitutionally providing that every professional man who has no diploma from the national or state colleges must take an examination in the Spanish language, unless he has a diploma from some country which has a reciprocity treaty with Mexico, as have Spain and Japan.

This examination is conducted by a jury of five professors, and covers, practically, every important branch of the profession; it is both oral and practical, and is conducted in a very fair and just manner.

I believe that I was the first American physician to take this examination, more than twenty years ago.

It is the general belief here, among the Mexican physicians, that the bill mentioned will be passed, as it is only what is required by civilized countries in general, and Mexico is endeavoring to get into line with other progressive nations.

With my best regards, believe me,

Very truly yours,
A. W. PARSONS, M.D., HARV. '80.

AN APPRECIATION.

Mr. Editor:

Inasmuch as the American Medical Association was invited by the Massachusetts Medical Society to hold its seventy-second annual session in Boston, it will interest the Fellows to know that the Secretary of the National Association said to the Secretary of the State Society as he was returning to Chicago, June 10, at the close of the Convention, that the American Medical Association very much appreciated the kindness shown to them and the support afforded by the Massachusetts Medical Society all along the line; that the session had been a banner meeting, and the assistance given by the local members had been unequalled at any previous meeting.

Respectfully yours,
WALTER L. BURRAGE,
Secretary.

A WARNING.

A preparation labelled "Arsphenamin," of supposedly German origin, is being sold in this country. Analysis shows that this compound is fraudulent and does not contain the required ingredients. Care should be exercised in buying arsphenamin unless it is known to be put out by a reputable firm.

APPOINTMENT.

DR. HOWARD H. STREETER, formerly of the Massachusetts Department of Public Health, has been appointed Executive Officer of the Board of Heath of Manchester, N. H., and assumed duties June 15, 1921.

RECENT DEATH.

DR. ARTHUR BENNETT MORONG died in Boston, May 3, 1921, at the age of 71. He was born in Cambridge October 25, 1849, took an A.B. at Amherst College in 1871, and an M.D. at Harvard Medical School in 1876. After teaching zoölogy in the Boston High School for two years, he joined the Massachusetts Medical Society and settled in practice in Boston, remaining until his death. For many years he was professor of clinical medicine and physiology in the College of Physicians and Surgeons, Boston, having first served that institution as professor of physiology and hygiene.